Series 1956, No. 10 Issued May 1960

SOIL SURVEY

Newberry County South Carolina

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

HOW TO USE THE SOIL SURVEY REPORT

THIS SURVEY of Newberry County will serve several groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for ponds and drainage structures; aid foresters in managing woodlands; and add to the soil scientist's fund of knowledge.

In making this survey, soil scientists walked over the countryside. They dug holes and examined surface soils and subsoils; measured slopes with a hand level; noticed differences in growth of crops, weeds, and brush; and, in fact, recorded all the things about the soils that they believed might affect their suitability for farming, engineering, forestry, and related uses.

The scientists plotted the boundaries of the soils on aerial photographs. Then, cartographers prepared from the photographs the detailed soil map in the back of this report. Fields, woods, roads, and many other landmarks can be seen on the map. Some fields may have grown up in forest since the photographs were made, and some field boundaries may have been changed.

Locating the soils

Use the index to map sheets to locate areas on the large map. The index is a small map of the county marked off in numbered rectangles to show where each sheet of the large map is located. When the correct sheet of the large map is found, it will be seen that boundaries of the soils are outlined and that each soil is designated by a symbol. All areas marked with the same symbol are the same kind of soil. Suppose, for example, an area located on the map has a symbol CdB. The legend for the detailed map shows that this symbol identifies Cecil sandy loam, gently sloping phase. This soil and all the others mapped in the county are described in the section, Series and Mapping Units.

Finding information

Few readers will be interested in all of the soil report, for it has special sections for different groups. The introductory part, which gives some general information, will be of interest mainly to those not familiar with the county.

Farmers and those who work with farmers can learn about the soils on a particular farm in the sections, Series and Mapping Units, and Use and Management of the Soils. The soils are grouped by capability units, which are groups of soils that need similar management and respond in about the same way. In the descriptions of the mapping units, Cecil sandy loam, gently sloping phase, for example, is shown to be in capability unit 2 (IIe–1). Hence, the management this soil and other similar soils need is stated under the heading, Capability unit 2 (IIe–1) in the section, Use and Management of the Soils. The same section shows, under Estimated Yields, and Relative Suitability of Soils on Crops, the yields of certain crops that can be expected under two levels of management and the relative suitability of the different soils for specified crops.

Foresters and others interested in woodlands can refer to the section, Woodland. This section gives the history of the woodlands since the first settlers came to the county. It tells what hazards are involved and what yields can be expected from loblolly pine, the most important species.

Engineers will be helped in building terraces, irrigation systems, and farm ponds by learning about the soils in the section, Series and Mapping Units, and by reading the section, Conservation Engineering.

Soil scientists will find information about how the soils were formed and how they were classified in the section, Genesis, Morphology, and Classification of Soils.

Students, teachers, and other users will find information about soils and their management in various parts of the report, depending on their particular interest.

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Contents

SOIL SURVEY OF NEWBERRY COUNTY, SOUTH CAROLINA

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UNITED STATES DEPARTMENT OF AGRICULTURE IN COOPERATION WITH SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

PRACTICALLY all of Newberry County has been cleared and cultivated at some time, but now about 68 percent of the acreage is in forest. Many large areas were abandoned after they became eroded and have reverted to forest that consists chiefly of pine trees. Other large areas have been planted to pines. Most of the uplands became eroded to varying degrees. The most extensive areas of badly eroded land are in the northern part of the county.

This survey was made as part of the technical assistance given by the Soil Conservation Service of the United States Department of Agriculture to the Newberry Soil Conservation District. Fieldwork was completed in 1956, and, unless otherwise specifically indicated, all statements in this report refer to conditions in the county at that time.

General Facts

Newberry County is in the northwestern part of South Carolina (fig. 1). It is bounded on the east by the Broad River and on the south by the Saluda River. The total land area of the county is 401,920 acres, or about 628 square miles. About 8,320 acres is water. Lake Murray and Lake Greenwood are the largest bodies of water. There are about 3,100 acres in house sites and 6 acres in mines and pits. The town of Newberry is the county seat. It is about 40 miles northwest of Columbia, S.C.

Settlement and Population

In 1752, a group of Scots settled along Duncan Creek. Later some Dutch settlers came to what is now the southern part of the county, and an Irish group settled near what is now the town of Newberry. English Quakers settled the area along the Little River. German Lutherans were also early settlers. Much of the present white population is descended from these original groups.

Newberry County was established in 1785 (*15*).[1] According to the 1950 census, the population is 31,771. Newberry, the largest town, has a population of 7,546. Whitmire is the next largest town. Other towns in order of their size are Prosperity, Pomaria, Little Mountain, Silverstreet, Chappells, and Peak. The population of the county has been stable for the past 20 years, but there has been a slight increase in urban population and a slight decrease in rural.

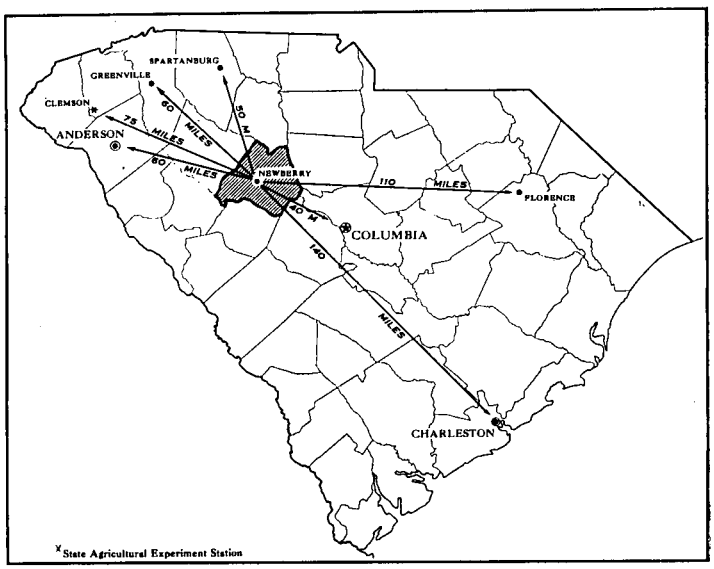

Figure 1.—Location of Newberry County in South Carolina.

Physiography

Newberry County is entirely within the Piedmont Upland. The southern tip is a short distance north of the Sand Hills. Physiographically, the county is a thoroughly dissected plain. The relief ranges from nearly level to steep, but it is prevailingly gently sloping to moderately steep. The first bottoms are nearly level to gently sloping and are narrow. The maximum width of the flood plains along the largest streams is one-fourth of a mile. The highest point in the county is in the extreme northwestern part, where the average elevation is 780 feet. The elevation in the central part of the county is 450 to

[1] Italic numbers in parentheses refer to Literature Cited p. 61.

500 feet. Along the southeastern boundary of the county is a series of hills. Little Mountain is the most prominent; it rises about 200 feet above the surrounding country. The lowest elevation—290 feet—is the surface of Lake Murray.

The county is dissected by a dendritic drainage system. All drainage is to the Broad and Saluda Rivers. Their main tributaries are the Little, Bush, Enoree, and Tyger Rivers.

Climate

Newberry County has a modified continental climate. It has a warm and temperate climate with no distinct dry season, but with hot summers in which the temperature of the warmest month averages 81° F. (table 1). Moderately dry periods of 2 to 6 weeks, however, are common in summer and fall. Short dry periods occur late in spring in some years. These are somewhat harmful to truck crops and pasture plants. The longer dry periods in summer and fall may be harmful to all crops. Dry weather at harvest time is favorable for hay and cotton. Favorable soil-moisture relations generally prevail throughout winter and spring. The precipitation rates for the winter months are about the same as for the summer and early fall months, but because of lower rates of evaporation and transpiration, the moisture content of the soil is generally optimum to excessive during the winter.

The winters are mild. The soil rarely freezes to depths of more than 2 or 3 inches. Below-freezing temperatures seldom last for more than 3 or 4 days at a time. The frost-free season extends, on the average, from March 29 to November 5, a period of 221 days.

Industries

In 1956, 76,498 cords of pulpwood was produced in Newberry County. Much of it was processed at a chipping plant in Prosperity. There are five lumber yards in the county where the lumber is dried and dressed for market. There are three textile mills in Newberry and one in Whitmire, and two garment factories in Newberry (*8*).

Transportation

Paved or tar-and-gravel Federal and State highways cross the county. Well-maintained tar-and-gravel roads reach all sections of the county.

The railroads provide adequate service for shipping freight. All cities and towns have sidings for shipping. A branch of the Southern Railway, built in 1851, passes through the county from east to west. The Columbia, Newberry & Laurens Railroad, completed to Clinton (Laurens County) in 1901, runs in a northwest-southeast direction. The main line of the Seaboard Air Line Railroad, constructed in 1893, passes through Whitmire, which is in the northern part of the county.

Facilities

Electricity is available to all communities. Much of the stationary power used on the farms is furnished by electric motors. Most rural houses have electric stoves, radios, and television sets. Telephone service is maintained in all the cities, towns, and suburbs and is available to many farm houses along the main roads.

The schools were consolidated in 1950. Before that, there were 60 school districts. There are now 16 elementary schools and 6 high schools. Pupils are transported to school by bus. Newberry College, a denominational school, was organized in 1856.

TABLE 1.—*Temperature and precipitation at Newberry, Newberry County, S.C.*

[Elevation, 476 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1925)	Wettest year (1929)	Average snowfall
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
December	45.3	83	5	4.27	2.70	4.48	0.4
January	45.2	82	−2	3.88	7.53	3.59	.7
February	46.7	83	6	4.55	2.44	10.40	.6
Winter	45.7	83	−2	12.70	12.67	18.47	1.7
March	54.9	92	14	4.08	2.05	9.82	.3
April	62.1	96	27	3.59	1.01	5.93	0
May	70.4	103	35	3.26	2.90	7.54	0
Spring	62.5	103	14	10.93	5.96	23.29	.3
June	78.6	106	45	4.50	.84	4.40	[3]
July	81.0	108	52	4.79	1.51	3.44	0
August	79.4	106	51	5.27	2.01	5.86	0
Summer	79.7	108	45	14.56	4.36	13.70	[3]
September	75.1	107	40	3.11	2.49	3.88	0
October	63.7	98	21	2.89	2.14	11.44	[3]
November	52.6	88	15	2.33	2.70	4.50	.1
Fall	63.8	107	15	8.33	7.33	19.82	.1
Year	62.9	108	−2	46.52	30.32	75.28	2.1

[1] Average temperature based on a 52-year record, through 1955; highest temperature based on a 49-year record and lowest temperature based on a 48-year record through 1952.

[2] Average precipitation based on a 52-year record, through 1955; wettest and driest years based on a 52-year record, in the period 1904–55; snowfall based on a 49-year record, through 1952.

[3] Trace.

Water Supply

Streams, ponds, and drilled wells are the chief sources of water for livestock. Most of the water used for irrigation is taken from ponds. Dug or drilled wells furnish water for rural homes. Water to supply the town of Newberry is pumped from the Bush River or the Saluda River. Apparently the supply is adequate for the foreseeable future. Other incorporated towns are supplied from wells and creeks.

The smaller streams and some of the wells are dry late in summer and in fall. There are about 550 farm ponds, from a quarter of an acre to 15 acres in size, according to the local office of the Soil Conservation Service. Water

in bodies of more than 20 acres occupies 8,576 acres. Most of this acreage is in Lake Murray, Lake Greenwood, and Parr Shoals.

Soils of Newberry County

The soils of Newberry County have developed under forest in an environment of moderately high temperature and moderately heavy, well-distributed rainfall. They were derived from igneous and metamorphic rocks that disintegrated and weathered in place and from materials deposited by floods or washed from higher lying areas. The soils, particularly those of the uplands, have been severely leached. The drainage ranges from good to poor, but most of the soils are well drained to moderately well drained. The relief is prevailingly gently sloping to moderately steep, but it ranges from nearly level to steep.

Much of the acreage is fairly free of stones, but much of area 3 (see general soil map) has large numbers of quartz cobblestones ranging in size up to more than 10 inches in diameter. A few large granite boulders occur northwest and east of Newberry. In the northern section are small areas of mica schist uncovered by accelerated erosion. A few outcrops occur in some areas of the Wilkes soils.

The soils of the uplands developed from residual material weathered from crystalline rocks and "Carolina slates".[2] Some of the soils have been severely eroded. The soils of the uplands and stream terraces are acid and contain very little organic matter. They are low to very low in natural fertility. Many of the soils of the bottom lands are high in fertility. They are moderately acid and contain a moderate supply of organic matter.

On old, high terraces along streams the soils consist of alluvium washed from the uplands and deposited on old flood plains. Subsequent cutting of the stream channel has left these deposits well above the present flood plains. The soils of the bottom lands consist of alluvium recently deposited by floodwater and of washings from the adjoining uplands.

General Soil Map

The soils of Newberry County can be shown in a general way on a small map in seven kinds of soil areas. Each kind of area is distinguished by the proportion and pattern of soils in it. The different kinds of areas are delineated on the colored general soil map at the back of this report and are described briefly in the following pages.

AREA 1

Gently to strongly sloping soils with red or yellowish-brown subsoil

The soils of this area are of the Georgeville, Herndon, Alamance, Tirzah, Goldston, Efland, and Orange series. Most of these soils are well drained to moderately well drained. Less well drained soils occur at the heads of and along drainageways. The depth to bedrock is 2 to 12 feet.

Area 1 covers about 12 percent of the county. It is in the southeastern part, in the Carolina slate belt. About 25 percent of the acreage is used for crops—chiefly cotton, corn, and small grains. A small part is used for permanent pasture. The remaining 65 to 70 percent is in cut-over pine forest. Much of this acreage could be cleared and cultivated, for about 70 percent of it is in capability classes II and III (see Capability Groups of Soils). About 30 percent is in class IV.

AREA 2

Gently sloping or sloping sandy loams or loamy sands with red, brown, or yellow subsoil

The predominant soils in this area are of the Cecil, Appling, Durham, Colfax, and Worsham series. Well-drained soils predominate, but there is some acreage of moderately well drained to somewhat poorly drained soils. The depth to bedrock ranges from 10 to 100 feet.

Area 2 covers about 9 percent of the county. It is in the central part, mostly northeast and northwest of Newberry. About 80 percent of the acreage is cropped, chiefly to cotton, corn, and small grains. A small part is used for permanent pasture. Most of the rest is in trees, mostly pines. About 95 percent of area 2 consists of soils in capability classes II and III. There are a few spots of class I soils, but most of the remaining 5 percent consists of soils in classes IV and V. In comparison to the soils of area 1, the soils suited to cultivation occur in larger acreages and are more easily worked but are not so well suited to pasture.

AREA 3

Sloping or steep, generally stony soils with red or brown subsoil

The soils of this area are of the Cecil, Appling, Lloyd, and Enon series. Most of the acreage is well drained, except for strips along drainageways. They differ from the soils of area 4 in having a considerable amount of quartz gravel in the uppermost 24 inches. This gravel makes the soils more difficult to work, but it also makes them less erodible.

Area 3 occupies about 5 percent of the county. It is an irregular strip just north of the Carolina slate belt in the southeastern part of the county. About 20 percent of the acreage is cultivated. Most of the rest is in forest consisting chiefly of pine trees. This area is especially well suited to loblolly pines.

A great part of this area is about evenly divided among capability classes II, III, and IV. About 5 percent consists of class V and class VI soils. There are very small acreages of class I and class VII soils.

AREA 4

Gently sloping to steep soils, mostly with red or brown subsoil

This soil area consists of Cecil, Enon, Wilkes, Cataula, and Lloyd soils. Much of the Wilkes soil, some of the Enon, and the more severely eroded areas of Cataula soils are shallow to bedrock. Most of the rest of area 4 consists of deep soils. More than half of the area is well drained. There is a considerable acreage that is moder-

[2] The so-called "Carolina slates" are rocks in the Carolina slate belt, which is made up of volcanic and sedimentary rocks, possibly of Paleozoic age. The rocks consist of varying proportions of slate and siltstone, probably in part tuffaceous, and of rhyolitic and andesitic flows, and breccias. The sedimentary units are well bedded and have the appearance of water-laid deposits (5).

ately well drained. Much of this is next to the well-drained Cecil and Lloyd soils. Poorly drained and somewhat poorly drained soils occur along the drainageways. Gently sloping and sloping permeable soils occupy the narrow ridgetops, which are widely distributed throughout the area.

Area 4 covers about 50 percent of the county. About 10 to 15 percent of it is used for general farming. Practically all of the rest is in forest, the use to which it is probably best suited. About a third is well suited to forest. Another third, including the shallow Wilkes soils and the Cataula and Enon soils that are shallow over clay subsoils, is fairly low in forest productivity. The rest, which consists chiefly of severely eroded Cecil and Lloyd soils, is suited to trees but is not very productive because of the erosion.

About 60 percent of area 4 consists of soils in capability classes IV, V, VI, and VII. Practically all of the rest consists of soils in classes II and III.

AREA 5

Gently sloping to strongly sloping soils with red, brown, or yellow subsoil

Cecil, Appling, Enon, Helena, Lloyd, Durham, and Davidson soils make up area 5. These soils are well drained to moderately well drained. The surface soil, except where severely eroded, is generally sandy loam, and the subsoil is friable, permeable clay loam. The depth to bedrock ranges from 5 to 100 feet.

Area 5 occupies about 18 percent of the county. From 60 to 65 percent of the acreage is used for general farming. About half of the rest is in forest, and the other half is in pasture. A large part of area 5 is well suited to forest. About a fifth of it, consisting of soils that overlie basic rocks, is probably especially well suited to upland hardwoods.

More than 90 percent of this area consists of class II and class III soils. There is a small acreage of class I soils, widely scattered in small patches. Most of the rest consists of class IV soils.

AREA 6

Gently sloping soils with brown or red clay subsoil

Area 6 is composed of Iredell, Mecklenburg, and Lloyd soils, which are well drained to somewhat poorly drained. The depth to bedrock ranges from 4 to 30 feet.

This area occupies not more than 1 percent of the county. The more extensive acreage is southeast of Kinards. Area 6 is not generally so well suited to cultivation as areas 2 and 5, because the soils are plastic and clayey. However, the moisture relations are generally somewhat better than in the dominant soils of areas 2 and 5, and the soils are among the best in the county for cotton. About 10 percent of area 6 is cultivated, and most of the rest is in improved pasture. The soils are suited to general farming. The Iredell soil is poorly suited to forest, and the Mecklenburg and Lloyd soils are well suited to forest.

Practically all of this area is made up of class II and class III soils. There is a little class I land.

AREA 7

Level to strongly sloping soils on bottom lands and stream terraces

Area 7 consists of Congaree, Chewacla, Hiwassee, Wickham, and Altavista soils. All of these soils are deep over bedrock. The soils on the stream terraces are chiefly well drained. Those on the bottom lands are well drained to poorly drained.

Area 7 occurs along the Saluda, Broad, Tyger, and Enoree Rivers. Its total acreage is about 3 percent of the county.

Much of area 7 has been cleared, but some of it has reverted to forest. Hardwoods predominate on the bottom lands, and pines on the stream terraces. The soils on the stream terraces are well suited to many different crops. The soils on the bottom lands are frequently flooded. If not flooded, they are particularly well suited to corn and certain legumes, but crops are lost about 1 year out of every 3 years. Forests in area 7 are particularly productive, especially those on the Congaree and Chewacla soils on the first bottoms.

About 85 percent of area 7 consists of class II soils. Most of them have impaired drainage. The rest of area 7 is made up chiefly of class III and class IV soils.

Series and Mapping Units

This section describes each of the soil units that appears on the soil map. There is a general description of each series, a short description of each mapping unit, and a detailed profile description of a representative soil of each series. The profile characteristics described are those observed at the location specified, except for the range in thickness of each horizon, which is that of the soil as it occurs in this county.

Table 2 lists the approximate acreage and proportionate extent of each mapping unit.

Alamance series

The Alamance series consists of deep, moderately well drained, dominantly silty soils. The relief is nearly level to sloping. These soils have a subsoil of yellow, friable silty clay. They are acid throughout. They have a very small supply of organic matter and are low in natural fertility. Water infiltrates slowly. Permeability is moderately slow. The available moisture capacity is moderate.

These soils occur with the Georgeville, Herndon, Orange, and Goldston soils. They differ from the Georgeville and Herndon soils in having yellow, rather than red, subsoil. They are deeper and better drained than the Orange soils. They are deeper than the Goldston soils and have more distinct horizons.

The parent material was residuum weathered from light-colored, fine-grained rocks known as Carolina slates. The natural vegetation consists of oak, pine, gum, cedar, elm, and hickory trees and an undergrowth of briers, pencilweed, muscadine grape, and grasses.

TABLE 2.—*Approximate acreage and proportionate extent of soils*

Soil	Acres	Percent
Alamance silt loam:		
Gently sloping phase	1, 958	0. 5
Sloping phase	444	. 1
Altavista fine sandy loam, gently sloping phase	810	. 2
Appling sandy loam:		
Gently sloping phase	22, 205	5. 5
Eroded gently sloping phase	1, 156	. 3
Sloping phase	6, 716	1. 7
Eroded sloping phase	2, 916	. 7
Strongly sloping phase	1, 109	. 3
Eroded strongly sloping phase	1, 093	. 3
Eroded moderately steep phase	429	. 1
Cataula sandy loam, eroded gently sloping phase	1, 443	. 4
Cataula clay loam:		
Severely eroded gently sloping phase	327	. 1
Severely eroded sloping phase	1, 457	. 4
Severely eroded strongly sloping phase	657	. 2
Cecil sandy loam:		
Gently sloping phase	44, 932	11. 2
Eroded gently sloping phase	25, 861	6. 4
Sloping phase	9, 186	2. 3
Eroded sloping phase	17, 177	4. 3
Strongly sloping phase	1, 915	. 5
Eroded strongly sloping phase	4, 398	1. 1
Moderately steep phase	2, 032	. 5
Eroded moderately steep phase	530	. 1
Eroded steep phase	421	. 1
Cecil clay loam:		
Severely eroded gently sloping phase	3, 313	. 8
Severely eroded sloping phase	22, 448	5. 6
Severely eroded strongly sloping phase	7, 892	2. 0
Severely eroded moderately steep phase	2, 367	. 6
Chewacla silt loam	1, 908	. 5
Colfax sandy loam	177	(1)
Congaree silt loam	347	1
Congaree fine sandy loam	4, 800	1. 2
Davidson loam, gently sloping phase	145	(1)
Durham loamy sand:		
Gently sloping thick surface phase	1, 965	. 5
Sloping thick surface phase	374	. 1
Durham sandy loam:		
Gently sloping phase	6, 834	1. 7
Sloping phase	1, 419	. 4
Efland silt loam:		
Gently sloping phase	290	. 1
Eroded sloping phase	386	. 1
Enon sandy loam:		
Gently sloping phase	18, 741	4. 7
Eroded gently sloping phase	1, 723	. 4
Sloping phase	14, 846	3. 7
Eroded sloping phase	7, 465	1. 9
Strongly sloping phase	4, 170	1. 0
Eroded strongly sloping phase	5, 787	1. 4
Moderately steep phase	1, 748	. 4
Eroded moderately steep phase	3, 162	. 8
Georgeville silt loam:		
Gently sloping phase	4, 611	1. 1
Sloping phase	2, 351	. 6
Strongly sloping phase	1, 082	. 3
Georgeville silty clay loam:		
Eroded gently sloping phase	2, 451	. 6
Eroded sloping phase	2, 064	. 5
Severely eroded sloping phase	1, 184	. 3
Severely eroded strongly sloping phase	1, 133	. 3
Goldston silt loam:		
Sloping phase	509	. 1
Strongly sloping phase	472	. 1
Helena sandy loam:		
Gently sloping phase	6, 861	1. 7
Sloping phase	3, 599	. 9
Helena sandy loam—Continued		
Eroded sloping phase	1, 693	0. 4
Eroded strongly sloping phase	843	. 2
Helena loamy sand, gently sloping thick surface phase	391	. 1
Herndon silt loam:		
Gently sloping phase	4, 616	1. 1
Eroded gently sloping phase	309	. 1
Sloping phase	4, 570	1. 1
Eroded sloping phase	953	. 2
Strongly sloping phase	437	. 1
Eroded strongly sloping phase	163	(1)
Hiwassee sandy loam:		
Gently sloping phase	1, 198	. 3
Eroded gently sloping phase	423	. 1
Sloping phase	305	. 1
Eroded sloping phase	525	. 1
Eroded strongly sloping phase	303	. 1
Iredell sandy loam, gently sloping phase	1, 616	. 4
Lloyd sandy loam:		
Gently sloping phase	4, 736	1. 2
Eroded gently sloping phase	4, 774	1. 2
Sloping phase	450	. 1
Eroded sloping phase	1, 862	. 5
Strongly sloping phase	306	. 1
Eroded strongly sloping phase	519	. 1
Moderately steep phase	192	. 1
Lloyd clay loam:		
Severely eroded gently sloping phase	305	. 1
Severely eroded sloping phase	1, 875	. 5
Severely eroded strongly sloping phase	831	. 2
Local alluvial land, well drained	2, 177	. 5
Lockhart clay loam:		
Severely eroded gently sloping phase	323	. 1
Severely eroded sloping phase	251	. 1
Mecklenburg sandy loam:		
Gently sloping phase	2, 032	. 5
Sloping phase	519	. 1
Eroded sloping phase	355	. 1
Eroded strongly sloping phase	320	. 1
Mixed alluvial land:		
Well drained	25, 343	6. 3
Poorly drained	4, 160	1. 0
Moderately gullied land:		
Firm materials	2, 542	. 6
Friable materials	3, 942	1. 0
Orange silt loam, gently sloping phase	562	. 1
Severely gullied land	654	. 2
Tirzah silt loam:		
Gently sloping phase	857	. 2
Eroded gently sloping phase	208	. 1
Sloping phase	314	. 1
Eroded sloping phase	486	. 1
Eroded strongly sloping phase	189	(1)
Wickham fine sandy loam:		
Gently sloping phase	865	. 2
Sloping phase	165	(1)
Wilkes sandy loam:		
Gently sloping phase	848	. 2
Sloping phase	2, 526	. 6
Eroded sloping phase	2, 081	. 5
Strongly sloping phase	3, 665	. 9
Eroded strongly sloping phase	5, 055	1. 3
Moderately steep phase	5, 855	1. 5
Eroded moderately steep phase	3, 185	. 8
Steep phase	2, 997	. 7
Eroded steep phase	991	. 2
Worsham sandy loam, gently sloping phase	3, 356	. 8
House sites; mines and pits	3, 106	. 8
Total	401, 920	100. 0

[1] Less than 0.1 percent.

Alamance silt loam, gently sloping phase (AaB).—This soil occupies broad, gentle slopes. It has a slope range of 2 to 6 percent. It is more extensive of the two Alamance soils mapped. It occurs in the southeastern part of the county. The following profile was observed 7 miles southeast of Prosperity, near O'Neal Church.

- A_1 0 to 4 inches, dark-gray (10YR 4/1) [3] coarse silt loam; weak fine crumb structure; very friable; contains many fine roots; clear smooth boundary; 2 to 7 inches thick.
- A_2 4 to 11 inches, light brownish-gray (2.5Y 6/2) coarse silt or very fine sandy loam; weak fine crumb structure; very friable; some fine roots; some fine to medium quartz gravel; clear smooth boundary; 5 to 10 inches thick.
- A_3 11 to 15 inches, yellow (2.5Y 7/6) silt loam; crushes to darker yellow (10YR 7/6); moderate medium granular structure; very friable; clear smooth boundary; 3 to 6 inches thick.
- B_{21} 15 to 25 inches, brownish-yellow (10YR 6/6) silty clay loam; weak fine subangular blocky structure; friable; clay skins are continuous but faint; clear smooth boundary; 8 to 12 inches thick.
- B_{22} 25 to 35 inches, brownish-yellow (10YR 6/8) silty clay loam mottled with yellow (10YR 8/8) and strong brown (7.5YR 5/6); moderate fine subangular blocky structure; hard when dry and friable when moist; faint clay skins; gradual smooth boundary; 8 to 14 inches thick.
- C_1 35 to 44 inches, strong brown, very pale brown, yellow, and yellowish-brown partially weathered Carolina slates with seams and lenses of clay material; 4 to 12 inches thick.
- C_2 44 to 53 inches +, very pale brown and brownish-yellow weathered Carolina slates.

The color of the surface soil varies from dark gray to yellowish brown. In some places the uppermost 1 or 2 inches of the A_2 horizon is grayish brown (2.5Y 5/2). The subsoil contains slate rock fragments, which become more numerous with depth. In places the subsoil is mottled with yellowish red.

Included are small areas of fine sandy loam. In other included areas the soil contains small pebbles, but not enough to interfere with tillage.

Use and management.—Almost all of this soil has been tilled. Much of it is still being used for crops and pasture. Some is in forest, largely of pines. A small part is idle, and a small part is used for nonfarm purposes.

Because of the gentle slopes, good tilth, and favorable moisture relations, this soil is suited to corn, cotton, soybeans, small grains, and annual lespedeza. It is especially productive of grasses and legumes for hay and pasture. Bermudagrass, dallisgrass, fescue, whiteclover, and annual lespedeza are suitable plants.

This soil is easily kept in good tilth and is responsive to good management. It needs to be protected against erosion. Liberal applications of lime and fertilizer are required to assure good yields. Rotations should be moderately long and should include legumes. Capability unit 3 (IIe–2).

Alamance silt loam, sloping phase (AaC).—This soil occurs next to areas of more gently sloping Alamance and associated soils. The slope range is 6 to 10 percent. The slopes are shorter and the depth to bedrock is about 12 inches less than in Alamance silt loam, gently sloping phase.

Part of the acreage is slightly or moderately eroded. In these areas the surface layer is grayish brown and is thinner than in the uneroded areas. There are a few small gullies. Runoff is rapid.

Small areas of Goldston soils are included in this mapping unit.

Use and management.—All of this soil has been cleared, but most of it is now in forest that consists mainly of pines. A small part is still cultivated or used for pasture.

This soil is suited to cultivation, but it should be kept in close-growing crops at least two-thirds of the time. Runoff must be controlled to prevent damage by erosion. An artificial system of water control may be needed. Capability unit 9 (IIIe–2).

Altavista series

This series consists of deep, light-colored, moderately well drained soils that occur on nearly level to gently sloping second bottoms and terraces along large streams. These soils are acid throughout. They are low in natural fertility and contain little organic matter. The infiltration rate is moderate, and the permeability is moderately slow. The available moisture capacity is moderate.

Associated soils are the Wickham and Hiwassee, which have redder subsoils than the Altavista soils.

The parent material was general alluvium washed from soils formed from granite, gabbro, gneiss, schist, and Carolina slates. The native vegetation consists of oak, gum, elm, maple, hickory, and pine trees and an undergrowth of briers and grasses.

Altavista fine sandy loam, gently sloping phase (AbB).—The following profile was observed in a pasture, 2 miles southwest of Chappells.

- A_p 0 to 7 inches, pale-brown (10YR 6/3) fine sandy loam; weak fine granular structure; very friable; contains an abundance of fine roots and a few fine to medium, water-rounded quartz pebbles; clear smooth boundary; 4 to 8 inches thick.
- B_1 7 to 22 inches, pale-olive (5Y 6/4) clay loam mottled with olive yellow (2.5Y 6/6); moderate medium subangular blocky structure; friable; many fine roots; clear smooth boundary; 12 to 18 inches thick.
- B_2 22 to 47 inches, light olive-brown (2.5Y 5/4) clay mottled with light brownish gray (10YR 6/2) and dark olive gray (5Y 3/2); moderate medium subangular blocky structure; friable; contains a few fine roots; clear smooth boundary; 18 to 30 inches thick.
- B_3 47 to 59 inches, light olive-brown (2.5Y 5/6) clay mottled with dark olive gray (5Y 3/2) and light gray (10YR 7/1); moderate medium to coarse subangular blocky structure; firm; contains a few mica flakes; clear smooth boundary; 8 to 14 inches thick.
- C 59 inches +, pale-yellow (5Y 8/4) fine sandy clay loam; becomes coarser textured with depth; mottled with gray (10YR 6/1) and light gray (10YR 7/1); weak fine platy structure that crumbles easily; very friable; contains numerous fine mica flakes.

In some places there is an A_2 horizon, and in some places the A_p horizon is silt loam. Small areas of Altavista silt loam and Altavista sandy loam are included with this soil. An appreciable amount of small- and medium-sized pebbles occurs in some small areas.

The color of the surface soil varies from pale brown to brownish yellow, and the thickness ranges from 6 to 12 inches. The color of the subsoil varies from light brown to yellow, and the degree of mottling, from faint to pronounced. The thickness of the subsoil ranges from 30 to 48 inches.

[3] Munsell color designation; all designations are for soil when moist.

Use and management.—All of this soil has been cultivated, and much of it is now used for crops and pasture. A part of the acreage is in forest that consists mostly of pines, a small part is idle, and a small part is used for nonfarm purposes.

This soil is suited to corn, soybeans, sorghum, dallisgrass, fescue, whiteclover, and annual lespedeza. High yields can be obtained only if the soil is liberally limed and fertilized. This soil is easy to keep in good tilth. It is susceptible to erosion and needs to be protected by water-control measures. It should be stripcropped where feasible. Rotations should be moderately long. Pastures ought to be mowed to control noxious weeds. Capability unit 3 (IIe–2).

Appling series

The Appling series is composed of deep, well-drained, gently sloping to moderately steep soils. These soils are acid. They are low in fertility and contain only a small amount of organic matter. The rate of infiltration is moderate, and the permeability and capacity for available moisture are moderate.

The Appling soils are distributed throughout the county, except in the slate belt in the southeastern part. They occur with the Cecil, Helena, Enon, and Durham soils. They are grayer than the Cecil and browner than the Durham soils. They are better drained and browner than the Helena and Enon soils.

The parent material was residuum weathered from granite, gneiss, and schist. The native vegetation consists of oak, hickory, gum, and pine trees and an undergrowth of briers and shrubs.

Appling sandy loam, gently sloping phase (AcB).—The following profile was observed in a field near Mount Pleasant Church.

- A_p 0 to 5 inches, grayish-brown (2.5Y 5/2) sandy loam; weak medium granular structure; very friable; contains an abundance of fine roots and a few fine quartz pebbles; clear smooth boundary; 2 to 8 inches thick.
- A_2 5 to 12 inches, olive-yellow (2.5Y 6/8) sandy loam; weak medium granular structure; very friable; contains many fine roots; acid; abrupt smooth boundary; 4 to 10 inches thick.
- B_1 12 to 18 inches, light yellowish-brown (2.5Y 6/4) clay loam mottled with light red (2.5YR 6/8); moderate medium subangular blocky structure; friable; contains many fine roots; acid; clear smooth boundary; 4 to 10 inches thick.
- B_2 18 to 30 inches, strong-brown (7.5YR 5/6) clay mottled with olive yellow (2.5Y 6/6); moderate medium subangular blocky structure; friable; acid; clear smooth boundary; 8 to 14 inches thick.
- B_3 30 to 40 inches, red (10R 5/8) clay mottled with yellowish red (5YR 5/6) and pale yellow (2.5Y 7/4); weak coarse blocky structure; breaks easily to moderate medium and fine angular blocky structure; firm; contains a few small pieces of weathered granite; acid; clear wavy boundary; 6 to 14 inches thick.
- C 40 inches +, red (10R 5/8) sandy clay loam mottled with yellowish red (5YR 5/6) and white (2.5Y 8/0); grades to lighter textured material; massive; contains pieces of disintegrated granite; acid; 10 to 70 feet deep to bedrock.

Included in this mapping unit are small areas of varying texture—fine sandy loam to coarse sandy loam—and small areas of gravelly sandy loam. The amount of gravel is not large enough to interfere with tillage. Medium to large granite boulders occur in a narrow band that extends from northwest to east 3 to 8 miles from Newberry. These boulders have to be bypassed in tillage.

The color of the surface soil ranges from pale olive to brown. The darker colors are in areas that have been cleared but have reverted to forest. In these areas the soil now contains a considerable amount of organic matter. The color of the subsoil ranges from reddish brown to yellowish brown. In some places the lower part of it is red. The mottles vary in color and distinctness. The thickness of the subsoil ranges from 24 to 50 inches. The slope ranges from gentle to strong.

Use and management.—Most of this soil has been cleared and is used for crops and pasture. Only a small part is idle. In the forested area, pines are the predominant trees.

This soil is well suited to cotton, corn, soybeans, and small grains. It is also suited to crimson clover, white clover, kudzu, bermudagrass, bahiagrass, sericea lespedeza, and annual lespedeza.

Lime and fertilizer are needed. Deep-rooted legumes will supply some of the nitrogen needed and will also improve the permeability of the subsoil. Crop residues and green-manure crops will add organic matter. Rotations should be of moderate length. Fields should be stripcropped where practicable, and half of the strips should be in close-growing crops and deep-rooted legumes. The erosion hazard is moderate. Capability unit 3 (IIe–2).

Appling sandy loam, eroded gently sloping phase (AcB2).—This soil occupies ridgetops. It is an important agricultural soil.

The texture of the surface soil varies from sandy loam to sandy clay loam. The 3- to 5-inch plow layer is a mixture of former surface soil and the subsoil. There are small areas of gravelly sandy loam. The pebbles are not numerous enough to interfere with tillage. The solum is 4 to 7 inches shallower than that of Appling sandy loam, gently sloping phase.

Use and management.—Most of this soil is in crops and pasture. Some is in forest, and some is idle.

This soil produces fair yields of the cultivated crops commonly grown in the county. If moderately limed and fertilized, it produces average yields of bermudagrass, dallisgrass, crimson clover, sericea lespedeza, and annual lespedeza. Yields of bicolor lespedeza, which provides food for wildlife, are average.

A complete water-disposal system is needed to conserve soil and moisture. Rotations should be 3 to 6 years long and should consist of close-growing crops for two-thirds of the time. Capability unit 9 (IIIe–2).

Appling sandy loam, sloping phase (AcC).—This is an important agricultural soil. It is widely distributed outside the slate belt. The slope range is 6 to 10 percent. The slopes are shorter than those of Appling sandy loam, gently sloping phase. Both the rate and volume of runoff are greater than on the gently sloping phase, and the erosion hazard is more severe.

The thickness of the surface soil ranges from 4 to 12 inches, and the color varies from light brown to olive brown. The color of the subsoil varies from yellowish brown to reddish brown, and the mottling occurs at greater depths than in the gently sloping phase of Appling sandy loam.

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Figure 2—**Appling sandy loam, eroded sloping phase, stripcropped on the contour to check erosion.**

Use and management.—Much of this soil is in crops. Some is in pasture, and some is in forest. A small acreage is idle or in nonfarm use.

This soil is suited to all the crops commonly grown. Suitable hay and pasture plants are bermudagrass, bahiagrass, dallisgrass, fescue, crimson clover, white clover, annual lespedeza, and sericea lespedeza. Bicolor lespedeza can be grown to provide food for wildlife.

Rotations should be of moderate length, and close-growing crops should be grown two-thirds of the time. Turning under crop residues and green-manure crops will increase the supply of organic matter. If hay and pasture crops are limed and fertilized, the yields are average. Capability unit 9 (IIIe–2).

Appling sandy loam, eroded sloping phase (AcC2).—The slope range of this soil is 6 to 10 percent. The plow layer is 2 to 6 inches thick. It is partly former subsoil. The color varies from brown to yellow. The subsoil is mottled to greater depths than that of Appling sandy loam, gently sloping phase. More water runs off this soil than off the gently sloping phase, and at a more rapid rate. Shallow gullies are common.

Use and management.—All of this soil has been cleared. Some is still in crops and pasture, but most has reverted to forest. A small acreage is idle or in nonfarm use.

The serious erosion hazard limits the use of this soil for cultivated crops. Bermudagrass, sericea lespedeza, and kudzu are suitable pasture plants. If fertilized, bicolor lespedeza yields a good supply of food for wildlife.

This soil responds well to lime and fertilizer. Heavy applications of fertilizer are needed. If this soil is cropped, it should be tilled on the contour (fig. 2). Terracing is not practicable. Close-growing crops should be planted in all natural drainageways. Three-quarters of a rotation should consist of close-growing grasses and legumes. The rotation should be 4 to 12 years long. Capability unit 14 (IVe–1).

Appling sandy loam, strongly sloping phase (AcD).—This is a widely distributed, though inextensive, soil. It does not occur in the slate belt. The slope range is 10 to 15 percent. The slopes are shorter than those of Appling sandy loam, gently sloping phase. The texture of the surface soil varies. In some places it is fine sandy loam; in others it is gravelly sandy loam. The thickness of the surface soil ranges from 4 to 12 inches. The thickness of the subsoil ranges from 18 to 36 inches. Runoff is rapid, and the erosion hazard is serious.

Use and management.—Most of this soil is in forest. A small part is in crops and pasture, and a small part is idle or used for nonfarm purposes.

If this soil is row cropped, less than average yields can be expected. Under proper management, pastures are very productive. Suitable plants are bermudagrass, bahiagrass, crimson clover, kudzu, sericea lespedeza, and annual lespedeza. Bicolor lespedeza yields fair amounts of food for wildlife.

Erosion control measures are needed. Terracing is not feasible, but contour stripcropping is. Three-fourths of the strips should be planted to close-growing perennials. Rotations should be long. The grasses and legumes respond well to lime and fertilizer. Liberal applications of fertilizer are needed. Capability unit 14 (IVe–1).

Appling sandy loam, eroded strongly sloping phase (AcD2).—This inextensive soil is widely distributed outside the slate belt. It has slopes of 10 to 15 percent. The 2- to 5-inch surface layer is a mixture of former surface soil and subsoil. In some places the texture is gravelly sandy loam; in other places it is sandy clay loam. The subsoil is 15 to 32 inches thick. Its color is generally yellowish brown. The short, strong slopes and the fine material in the surface soil make this soil very erodible.

Included with this soil are areas where all the surface soil has been lost through erosion.

Use and management.—Most of this soil is in forest. A small part is in pasture or is idle.

Because of the serious erosion hazard, this soil is not suited to cultivated crops and is of limited use for pasture. Yields of bermudagrass, kudzu, and sericea lespedeza are only fairly good. Bicolor lespedeza grown to provide food for wildlife should be fertilized.

This soil responds well to lime and fertilizer. Heavy applications of fertilizer are needed. Capability unit 19 (VIe–2).

Appling sandy loam, eroded moderately steep phase (AcE2).—This soil, though inextensive, is widely distributed outside the slate belt. It occurs below more gently sloping Appling soils and other associated soils that lie near large streams.

The texture of the surface soil varies from gravelly sandy loam to sandy clay loam. The color of the subsoil is a uniform yellowish brown. The thickness of the subsoil ranges from 12 to 36 inches. The slope gradient exceeds 15 percent. The slopes are shorter than those of Appling sandy loam, gently sloping phase. Runoff is greater and faster, and the erosion hazard is more serious. Shallow gullies are common, and, in places, scars of deeper gullies remain. A few acres of shallow soils are included.

Use and management.—Most of this soil is in forest. A small acreage is in pasture, and a small acreage is idle.

This soil is unsuitable for row crops. If it is used for pasture, lime and fertilizer should be applied and grazing should be limited. Suitable pasture plants are bermudagrass, kudzu, and sericea lespedeza. Only fair

yields can be expected. Bicolor lespedeza can be grown to provide food for wildlife. Capability unit 19 (VIe–2).

Cataula series

The Cataula series consists of deep to moderately deep, moderately well drained, gently to strongly sloping soils. These soils are strongly acid. They are low in fertility and have only a small amount of organic matter. The rate of infiltration is slow to very slow in eroded areas and moderate in other areas. The available moisture capacity is low, particularly in severely eroded sites. Permeability is moderately slow to slow. Sheet and gully erosion are serious hazards. Some deep, narrow gullies have already formed.

These soils have, in the lower part of the B horizon or in the upper part of the C horizon, a very firm, hard, compact layer in which permeability is very slow. The C horizon is very hard when dry and sticky and plastic when wet. It contains many fine mica flakes.

The Cataula soils occur in the northwestern part of Newberry County, near the Cecil, Enon, and Wilkes soils. They differ from the Wilkes soils in having a well-developed profile. They differ from the Cecil soils in having slower permeability and in having a firm to very firm clay subsoil. They are redder in color and are less plastic than the Enon soils.

The parent material was residuum weathered from micaschist. The native vegetation consists of oak trees and a few hickory, elm, gum, persimmon, cedar, and pine trees.

Cataula sandy loam, eroded gently sloping phase (CbB2).—The following profile of this soil was observed in an old field, now planted to loblolly pines, 2 miles northwest of Cromer Crossroads on Forest Service Road.

- A_p 0 to 7 inches, light yellowish-brown (10YR 6/4) light sandy loam; weak to very weak fine crumb structure; very friable; contains fine to medium roots, some coarse quartz sand, and some fine gravel; abrupt smooth boundary; 3 to 10 inches thick.
- B_1 7 to 9 inches, red (2.5YR 4/8) clay; moderate medium blocky structure; distinct clay skins; some material of the A_p horizon penetrates along root channels; firm when moist, plastic and sticky when wet; contains a few medium and fine roots; clear smooth boundary; 1 to 5 inches thick.
- B_2 9 to 15 inches, red (2.5YR 4/8) clay; moderate medium and fine subangular blocky structure; firm; contains several medium-sized roots and a few fine mica flakes; distinct clay skins; gradual smooth boundary; 4 to 9 inches thick.
- B_3 15 to 29 inches, red (2.5YR 5/8) clay mottled with very pale brown (10YR 7/4); medium, distinct mottles are common and occur primarily on structural faces; moderate coarse subangular blocky breaking to fine angular blocky structure; firm to very firm when moist, slightly plastic and sticky when wet; hard when dry; distinct clay skins; contains a few flattened roots and a few fine mica flakes; gradual smooth boundary; 12 to 18 inches thick.
- C_1 29 to 42 inches, dark-red, pale-brown, and strong-brown clay loam; very weak angular blocky structure to massive; some clay in cracks; firm, slightly plastic and sticky; hard when dry; contains fine mica flakes; gradual smooth boundary; 10 to 18 inches thick.
- C_2 42 inches +, reddish-yellow, red, and pale-brown, heavy sandy loam; seams and pockets of clay material; massive; hard when dry; contains many mica flakes; several feet to bedrock.

The surface layer varies in color from light yellowish brown to grayish brown and in thickness from 3 to 10 inches. Where all the surface soil has been removed, the texture is clay loam to clay.

Use and management.—All of this soil has been cleared and cultivated. Most of it is now in forest, but some is used for cultivated crops and pasture. A small part is idle, and a small part is in nonfarm use.

This soil is fairly well suited to corn, cotton, soybeans, small grains, white clover, crimson clover, fescue, ryegrass, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. For fair yields, liberal liming and fertilizing are needed. Manure, crop residues, and green-manure crops are needed to add organic matter to the soil. Deep-rooted legumes or grasses grown for green-manure crops will improve aeration and make the soil more readily permeable to plant roots. Rotations should be of moderate length. These good management practices will help prevent sheet erosion and will make this soil fairly productive of hay and pasture plants. Capability unit 10 (IIIe–3).

Cataula clay loam, severely eroded gently sloping phase (CaB3).—This soil has lost all of its original surface soil through erosion. Some gullies are forming that cannot be crossed by tillage implements. Because of the fine texture of the surface soil, water infiltrates slowly to very slowly and runoff is rapid. Permeability is slow. Roots penetrate the soil slowly. The capacity for available moisture is very low.

Use and management.—All of this soil has been cleared and used for crops and pasture, but most of it is now in forest. Pine trees are predominant, but even these will not live on the badly eroded ridgetops and shelves.

If row crops are grown, they should be rotated with close-growing crops. Cotton, corn, or soybeans may be grown for 1 year, then bermudagrass or annual lespedeza for 3 years. Heavy applications of lime and fertilizer will help to insure fair yields.

This very erodible soil needs to be protected by contour tillage, water-disposal systems, and strips of close-growing crops. Terraces are hard to construct and maintain and are, therefore, impracticable. Capability unit 15 (IVe–2).

Cataula clay loam, severely eroded sloping phase (CaC3).—This soil occurs between Jalapa and Whitmire. It is a deep, moderately well drained, inextensive soil on breaks below areas of the more gently sloping Cataula soils and associated soils. The present surface layer is clay loam or clay in most places, but, in some small to medium-sized areas, it is sandy clay loam. The slopes are shorter than those of Cataula clay loam, severely eroded gently sloping phase, and runoff is faster and greater. Internal drainage is slow. Aeration is poor. Because it is difficult for roots to penetrate this soil, tree growth is slow. There are small gullies that, for the most part, are well stabilized by vegetation.

Use and management.—Much of this soil has been cropped to cotton, but most of it is now in forest that consists chiefly of pines. Because of the serious erosion hazard, this soil is not suited to cultivated crops or to pasture. Capability unit 24 (VIIe–3).

Cataula clay loam, severely eroded strongly sloping phase (CaD3).—This is an inextensive soil that occurs in the northwestern part of the county between Jalapa and

Whitmire, generally on sharp breaks next to areas of more gently sloping Cataula, Cecil, and Enon soils. It has shorter slopes than Cataula clay loam, eroded gently sloping phase. The surface layer is brown or weak red and is only 1 to 3 inches thick. There are many gullies, which will erode further and cave in unless they are stabilized.

Use and management.—Some of this soil has been cropped and pastured. All of it is now in forest. Pine trees predominate. Forest is the best use for this soil. Capability unit 24 (VIIe–3).

Cecil series

The Cecil is the dominant series in the county. It consists of deep, well-drained, gently sloping to steep, acid soils. The texture of the surface soil varies from gravelly sandy loam to clay. The clay loam and clay occur where the original surface layer has been removed by accelerated erosion. The gravelly soils in this series contain fragments of quartz, gneiss, or granite that somewhat interfere with cultivation. The thickness of the solum ranges from 24 inches to 72 inches. The depth to bedrock ranges from 2 to 20 feet.

The Cecil soils are widely distributed throughout the county, except in the slate belt, which is in the southeastern part of the county. They occur with the Appling, Durham, Lockhart, Cataula, Lloyd, Enon, and Wilkes soils. The Cecil soils have a redder B horizon than the Appling soils, which, in turn, have a redder B horizon than the Durham soils. The Cecil soils lack the large number of feldspar crystals that characterize the Lockhart soils. They are lighter colored and more friable than the Cataula soils. They have a lighter colored B horizon than the Lloyd soils. They are redder and more friable than the Enon soils, which formed from similar parent material. They have a deeper solum and much more distinct horizons than the Wilkes soils.

The parent material was residuum weathered from metamorphic and igneous rocks, including gneiss, schist, and granite. The soils developed under forest. The present forest consists of oak, hickory, dogwood, sourwood, gum, poplar, cedar, and pine trees and an undergrowth of briers, shrubs, and vines.

Cecil sandy loam, gently sloping phase (CdB).—This is the most extensive soil in the county. The following profile was observed in a pine forest on St. Philip road 5 miles east of Newberry.

- A_1 0 to 5 inches, brown (7.5YR 5/4) sandy loam; weak fine granular structure; very friable; contains many fine roots and a few small iron concretions; many fine pores; clear smooth boundary; 2 to 8 inches thick.
- A_2 5 to 12 inches, yellowish-brown (10YR 5/8) sandy loam; weak medium and fine granular structure; very friable; contains many fine roots, a few medium roots, and a few small pores; clear smooth boundary; 5 to 9 inches thick.
- B_1 12 to 16 inches, red (2.5YR 5/8) clay loam; moderate fine and medium subangular blocky structure; friable; slightly sticky when wet; contains many fine and medium roots, a few fine mica flakes, and a few small pores; clear smooth boundary; 2 to 8 inches thick.
- B_2 16 to 27 inches, red (2.5YR 5/8) clay; moderate medium subangular blocky structure; friable; sticky when wet, hard when dry; contains a few medium and large roots and many fine mica flakes; clear smooth boundary; 8 to 16 inches thick.
- B_3 27 to 39 inches, red (2.5YR 4/8) clay; moderate coarse and medium subangular blocky structure; friable to firm; sticky when wet, hard when dry; contains a few medium and large roots, many fine mica flakes, and a few medium pores; clear smooth boundary; 8 to 20 inches thick.
- C 39 to 49 inches +, red (2.5YR 5/8) sandy clay loam; reddish-yellow (7.5YR 6/8), common, distinct, fine and medium mottles; massive; contains seams of clay that have penetrated from the B layer; contains many fine mica flakes, a little quartz gravel, and some weathered scales or flakes of parent rock; 6 to 24 inches thick; grades into coarser textured material.

Included are some small areas of gravelly sandy loam to clay. The color varies from brown to grayish brown. In some small areas, the color is reddish brown. The color of the subsoil is red to yellowish red. Some mottling occurs in the lower few inches. There are some mica flakes throughout the profile. In some areas the soil contains quartz gravel and small iron concretions.

Use and management.—All of this soil has been cultivated. Much of the time it has been in cotton. A large part is now cultivated or in pasture. Some is in forest, and some is idle or in nonfarm use.

Gentle slopes, good tilth, and favorable moisture relations make this soil suitable for general farming. It responds to good management. It is fairly good for pasture. Moderate measures for soil and water conservation are needed. Capability unit 2 (IIe–1).

Cecil sandy loam, eroded gently sloping phase (CdB2).—This is a moderately extensive soil that is widely distributed outside the slate belt. It is about 10 inches shallower than Cecil sandy loam, gently sloping phase. In most places, the 4- to 5-inch plow layer is a mixture of former surface soil and subsoil. It contains much more fine material than the surface soil of the gently sloping phase. The texture ranges from sandy loam to clay loam. The dominant color is reddish brown.

There are some small, severely eroded areas in which the plow layer is red to yellowish-red clay. In these areas a few small gullies have formed.

Use and management.—All of this soil has been cultivated. It was used continuously for cotton for many years. A large part of the acreage has now reverted to forest that consists chiefly of pine trees. A small part is used for crops and pasture. Only a very little is idle or used for nonfarm purposes.

This soil is suited to most of the crops commonly grown. It is less productive than Cecil sandy loam, gently sloping phase, is more difficult to till, and needs more intensive measures to control runoff and erosion. It responds to liberal applications of lime and fertilizer. It should be kept in close-growing crops two-thirds of the time. Crop residues and green-manure crops should be returned to the soil to supplement the supply of organic matter. This will improve permeability, infiltration, and aeration.

If properly limed and fertilized, this soil produces good hay and pasture. It is suited to all commonly grown grasses and legumes. Bicolor lespedeza can be grown to provide food for wildlife. Capability unit 8 (IIIe–1).

Cecil sandy loam, sloping phase (CdC).—This moderately extensive soil is widely distributed outside the slate belt. The slope range is 5 to 10 percent. In general, the slopes are shorter than those of Cecil sandy loam, gently sloping phase.

Use and management.—Some of the acreage is in crops, some in pasture (fig. 3), and some in forest. A small acreage is idle or in nonfarm use.

This soil responds to fertilizing, liming, and other good management practices. It is more likely to erode than Cecil sandy loam, gently sloping phase. Terracing and contour stripcropping help to prevent serious erosion. Two-thirds of the strips should be in close-growing crops. Bicolor lespedeza can be grown to provide food and cover for wildlife. Capability unit 8 (IIIe–1).

Cecil sandy loam, eroded sloping phase (CdC2).—This moderately extensive soil occupies breaks next to Cecil sandy loam, gently sloping phase, and associated soils. The slope range is 5 to 10 percent. Generally, the slopes are shorter than those of the gently sloping phase.

The present surface layer is 3 to 4 inches thick. It is a mixture of former surface soil and subsoil. Because it is finer textured than that of the gently sloping phase, infiltration is slower and runoff is faster and greater; consequently, both sheet erosion and gullying are hastened.

Use and management.—Most of this soil is in forest. Small acreages are in crops and pasture; a little is idle or in nonfarm use.

This soil is deficient in plant nutrients and organic matter. It responds to heavy applications of lime and fertilizer. On the stronger slopes, the erosion hazard is serious. If this soil is cropped, at least three-quarters of it should be in close-growing perennial crops for 4 or more years at a time. All natural drainageways should have a cover of perennial vegetation.

Because of the erosion hazard, it is best to leave this soil in forest or to plant it to grasses or legumes for hay and pasture. Perennial plants to which this soil is fairly well suited are bermudagrass, dallisgrass, fescue, kudzu, whiteclover, and sericea lespedeza. Crimson clover overseeded on bermudagrass provides fairly good pasture. Bicolor lespedeza can be grown as food for wildlife. Capability unit 14 (IVe–1).

Cecil sandy loam, strongly sloping phase (CdD).—This is a minor soil of the Cecil series. The slope range is 10 to 15 percent. The erosion hazard is serious.

Use and management.—Most of this soil is in forest. Small acreages are in crops and pasture; a little is idle or in nonfarm use.

This soil responds to liming, fertilizing, and other good management practices. All natural drainageways should be in perennial grasses and legumes. If row crops are grown, they should be rotated with close-growing crops. The rotations should be 4 to 8 years long, and the soil should be in close-growing crops three-fourths of the time. Tillage should be on the contour. Terracing is not feasible. Liberal applications of lime and fertilizer will help to maintain good stands of pasture plants. Bicolor lespedeza grown as food for wildlife should be fertilized. Capability unit 14 (IVe–1).

Cecil sandy loam, eroded strongly sloping phase (CdD2).—This moderately extensive soil is widely distributed outside the slate belt. The slope range is 10 to 15 percent. The slopes are shorter than those of Cecil sandy loam, gently sloping phase. The present 2- to 4-inch surface layer is a mixture of former surface soil and subsoil. Its texture varies from sandy loam to sandy clay loam. The depth of the solum is 20 to 36 inches.

***Figure 3.*—Pasture on Cecil sandy loam, sloping phase, surrounding a pond that supplies water for stock and for irrigating.**

Use and management.—Most of this soil has been cropped. It has largely reverted to or been planted to pine trees. Very small acreages are in crops or pasture; a little is idle or in nonfarm use. Because of the strong slopes and the serious hazard of erosion, this soil is unsuitable for cultivation.

If this soil is used for pasture, it is essential to lime and fertilize heavily and to control grazing in order to maintain a good carrying capacity. Bicolor lespedeza grown in forest openings must be fertilized to produce fair yields of food for wildlife. Capability unit 19 (VIe–2).

Cecil sandy loam, moderately steep phase (CdE).—This soil occupies steep breaks along small and medium-sized streams. Its slope range is 15 to 25 percent. The slopes are shorter than those of Cecil sandy loam, gently sloping phase.

Use and management.—Some of this soil has been cleared, but most of it is in forest. Only small areas are idle or in nonfarm use.

Because of its steep slopes and the hazard of erosion, this soil is unsuitable for cultivation. The slopes are so steep that it is impossible to use farm machinery.

If this soil is fertilized, it produces fair yields of kudzu or sericea lespedeza. Bicolor lespedeza grown to provide food for wildlife needs to be fertilized. Capability unit 19 (VIe–2).

Cecil sandy loam, eroded moderately steep phase (CdE2).—This is a minor soil of the Cecil series. It occupies breaks next to the more gently sloping Cecil soils and associated soils. The slope range is 15 to 25 percent. The surface soil varies in texture from sandy loam to clay loam. It is no more than 4 inches thick. In some places none of the original surface soil remains. The solum is 16 to 30 inches deep. Small gullies have formed in some areas.

Use and management.—Most of this soil is in a forest of mixed hardwoods and pines. The pine trees predominate. A small acreage is idle or in nonfarm use. Because of the steep slopes and susceptibility to erosion, this soil is unsuitable for cultivation. It can be used for pasture to only a limited extent. Kudzu and sericea lespedeza are suitable pasture plants. If they are limed and fertilized, they produce fair yields and a good ground

Figure 4.—**Cecil clay loam, though severely damaged by erosion, supports a productive stand of loblolly pine.**

cover. Bicolor lespedeza should be fertilized if grown as food for wildlife. Capability unit 22 (VIIe–1).

Cecil sandy loam, eroded steep phase (CdF2).—This minor soil of the Cecil series occurs along large streams outside the slate belt. It occupies steep bluffs between the first bottoms and areas of more gently sloping Cecil soils and associated soils. The texture of the surface soil varies from sandy loam to clay. The solum is 8 to 24 inches deep.

Use and management.—All of this soil is in forest—reverted or planted. It is a mixed forest of hardwoods and pines. The steep slopes and serious erosion hazard make this soil unsuitable for crops or pasture. Bicolor lespedeza planted in forest openings to provide food for wildlife needs to be fertilized. Capability unit 22 (VIIe–1).

Cecil clay loam, severely eroded gently sloping phase (CcB3).—Small and medium-sized areas of this inextensive soil are widely distributed, mostly on ridgetops and on smooth areas near moderately gullied areas. All of the original surface soil has been lost through erosion. The present surface layer is predominantly red and is 2 to 3 inches thick. Its texture ranges from clay loam to clay. Because of the fine texture, the rate of infiltration is slow and the amount of runoff is large. Sheet erosion and shallow gullies are common.

The vegetation consists chiefly of scrub oak, sweetgum, persimmon, sassafras, and pine trees and a ground cover of povertygrass.

Use and management.—All of this soil has been cultivated, much of the time continuously to cotton. Most of it has reverted to or been planted to pine trees (fig. 4).

This soil is not suited to cultivated crops, because it is low in fertility and deficient in organic matter. If it must be cultivated, crop residues and cover crops should be turned under every 3 or 4 years. Heavy applications of lime and fertilizer are essential for fair yields of cultivated crops, hay, or pasture. Fertilizer is also needed for bicolor lespedeza. Capability unit 14 (IVe–1).

Cecil clay loam, severely eroded sloping phase (CcC3).—The slope range of this soil is 6 to 10 percent. The slopes are shorter than those of Cecil clay loam, gently sloping phase. The texture of the surface soil varies from sandy clay loam to clay, and the color, from reddish brown to red. Numerous shallow gullies have formed.

Use and management.—Most of this soil has been cleared, but it has reverted to or has been planted to pine trees. Very small acreages are idle or in crops or pasture.

Because it is severely eroded, this soil is unsuited to cultivation. If it is heavily limed and fertilized, it can be planted to perennial grasses and legumes for pasture. Bicolor lespedeza planted in forest openings should be fertilized. Capability unit 19 (VIe–2).

Cecil clay loam, severely eroded strongly sloping phase (CcD3).—The slope range of this soil is 10 to 15 percent. The color of the surface layer varies from reddish brown to red, and the texture varies from clay loam to clay. The depth to parent material ranges from 12 to 24 inches. Runoff is very rapid. Many shallow gullies have formed. All plants grow very slowly because the soil is deficient in plant nutrients.

Use and management.—All of the virgin forest has been cut, and most of this soil is now in pine forest. A small acreage is idle or used for nonfarm purposes.

The hazard of accelerated erosion makes this soil unsuitable for crops or pasture. Bicolor lespedeza planted in forest openings needs to be liberally fertilized to produce fair yields of food for wildlife. Capability unit 22 (VIIe–1).

Cecil clay loam, severely eroded moderately steep phase (CcE3).—This moderately extensive soil occupies breaks between small streams and areas of more gently sloping Cecil soils and associated soils. The original surface soil has been removed by erosion. In some small areas, most of the subsoil has also been lost. The thickness of the solum ranges from 6 to 20 inches. Plants are stunted because the plant nutrients have been washed away. The texture of the present surface layer varies from sandy clay loam to clay, and the color varies from reddish brown to red. Shallow gullies are common.

Use and management.—Practically all of this soil is in a predominantly pine forest. Only very small areas are idle. The serious hazard of erosion and the steep slopes make this soil unsuitable for cultivated crops or pasture. Capability unit 22 (VIIe–1).

Chewacla series

The Chewacla series is composed of somewhat poorly drained to moderately well drained, deep soils that are frequently flooded. The texture of the surface soil, although predominantly silt loam, varies from fine sandy loam to clay loam. Mottling occurs at depths of 10 to 18 inches.

These soils are acid. They are moderately high in organic matter, and their natural fertility is high. The depth to the water table ranges from 24 to 60 inches. Runoff and infiltration are slow. The subsoil is slowly permeable. The available moisture capacity is moderately high.

The Chewacla soils occur in narrow, elongated strips on the first bottoms of large streams. They occur with the Congaree soils and with undifferentiated, well-drained and poorly drained soils formed from alluvium.

The parent material was general alluvium washed from granite, gneiss, schist, Carolina slates, and basic rocks. The material has not been in place long enough for distinct horizons to develop. The native vegetation consists of oak, ash, cottonwood, gum, birch, hickory, and sycamore trees and an undergrowth of reeds, briers, and grasses.

Chewacla silt loam (Ce).—The following profile of this soil was observed 3 miles west of Old Town.

- A_1 0 to 5 inches, very dark grayish-brown (10YR 3/2) silt loam; weak fine granular structure; very friable; very slick when wet; contains mass of fine roots, a little very fine quartz gravel, and very fine flakes of mica; strongly acid; clear smooth boundary; 3 to 8 inches thick.
- A_2 5 to 13 inches, dark-brown (7.5YR 4/4) silt loam; weak fine granular structure; very friable; contains many fine roots and very fine flakes of mica; a few fine pores; strongly acid; clear smooth boundary; 6 to 12 inches thick.
- A_3 13 to 32 inches strong-brown (7.5YR 5/6) silt loam mottled with grayish brown (2.5Y 5/2); weak medium granular structure; friable; contains a few fine roots, some medium roots, and fine flakes of mica; strongly acid; clear smooth boundary; 12 to 24 inches thick.
- C 32 to 65 inches +, yellowish-brown (10YR 5/6) silty clay loam mottled with dark brown (7.5YR 4/4) and light brownish gray (2.5Y 6/2); weak coarse angular blocky structure; friable; contains a few medium roots and many fine flakes of mica; strongly acid; at a depth of about 48 inches, a noticeable amount of excess moisture; 12 to 60 inches thick.

In some areas the subsoil is darker colored, and in some areas lighter grayish-brown mottles occur at a depth of about 8 inches. There are areas of silty clay loam and fine sandy loam. Apparently these variations do not affect the use and management of the soil. The amount of very fine micaceous material varies from place to place.

Use and management.—This soil is fairly well suited to cultivated crops, hay, and pasture. The crops to which it is suited are corn, oats, soybeans, fescue, whiteclover, dallisgrass, bermudagrass, and annual lespedeza.

To obtain moderately high yields, good management is essential. Tilth is fairly easy to maintain. Crop residues and green-manure crops should be turned under to maintain the supply of organic matter. Lime and fertilizer are needed. Open ditches are needed to remove excess surface water. Every 2 to 4 years, a crop may be lost because of overflow and waterlogging. Capability unit 12 (IIIw–2).

Colfax series

The Colfax series consists of deep, somewhat poorly drained soils. They occur in nearly level and gently sloping areas at the heads of small drainageways and on low divides between drainageways.

The surface layer is 14 to 24 inches thick. The depth to the parent material ranges from 48 to 72 inches.

These soils are strongly acid. They contain very little organic matter and are very low in natural fertility. Infiltration is rapid, and permeability is moderately slow to slow. The available moisture capacity is moderately low to low.

The Colfax soils are scattered north and northeast of Newberry. One small area is near Bush River Church. These soils occur with the well-drained Appling and Durham soils, the somewhat poorly drained Helena soils, and the poorly drained Worsham soils.

The parent material was residuum weathered from granite and gneiss. The soils developed under a forest consisting of oak, gum, alder, and elm trees and an undergrowth of reeds, briers, and grass.

Colfax sandy loam (Cf).—This is not an extensive soil. Most of it is just northeast of Newberry. The following profile was observed in a pasture 2 miles north of Newberry.

- A_p 0 to 4 inches, grayish-brown (2.5Y 5/2) sandy loam; weak fine granular structure; very friable; contains many fine roots and a few coarse sand grains; strongly acid; clear smooth boundary; 3 to 7 inches thick.
- A_2 4 to 18 inches, olive (5Y 5/3) sandy loam; weak coarse granular structure; very friable; contains many fine roots and a few coarse sand grains and small quartz pebbles; strongly acid; clear smooth boundary; 8 to 18 inches thick.
- B_1 18 to 28 inches, yellowish-brown (10YR 5/6) sandy clay loam mottled with light brownish gray (2.5Y 6/2); moderate medium angular blocky structure; friable; contains a few fine roots and a few fine mica flakes; strongly acid; clear smooth boundary; 8 to 12 inches thick.
- B_2 28 to 42 inches, strong-brown (7.5YR 5/8) clay mottled with gray (10YR 6/1); strong medium angular blocky structure; firm; plastic when wet, hard when dry; contains a few fine mica flakes; strongly acid; clear smooth boundary; 10 to 18 inches thick.
- B_3 42 to 55 inches, gray (N 6/0) clay mottled with gray (10YR 6/1); strong coarse angular blocky structure; firm; plastic when wet, hard when dry; contains many fine mica flakes and a small amount of disintegrated granite; strongly acid; clear smooth boundary; 10 to 16 inches thick.
- C_1 55 inches +, light-gray (5Y 7/1) gravelly sandy clay; grades to coarser textured sand; structureless; contains much fine mica and many flakes, or sheets, of disintegrated granite; 10 to 60 feet to bedrock.

In some areas there are thin deposits of material washed from the adjoining slopes. There are variations in the intensity of mottling and in the degree of plasticity in the lower part of the B horizon.

Use and management.—All of this soil has been cropped, but now some of it is in forest and some is in pasture. If heavily limed and fertilized, this soil is moderately productive of truck crops, corn, small grains, dallisgrass, bermudagrass, bahiagrass, whiteclover, tall fescue, and annual lespedeza.

Erosion is not a hazard, but the gentle slopes should be terraced and cultivated on the contour. Open ditches may be needed to remove surface water from the nearly level areas. Capability unit 13 (IIIw–3).

Congaree series

The Congaree series consists of deep, young, well drained to moderately well drained, grayish-brown soils. The texture of the surface soil varies from sandy loam to silty clay loam. Mottling occurs at depths of 18 to 36 inches. These soils are acid and appear to be well supplied with organic matter. They apparently have a high available moisture capacity. Infiltration and permeability are moderately rapid. All areas are occasionally flooded.

The Congaree soils occupy the first bottoms of large streams. They occur with the somewhat poorly drained Chewacla soils and with Mixed alluvial land, poorly drained, and Mixed alluvial land, well drained.

The parent material was alluvium derived from granite, gneiss, schist, Carolina slates, and basic rocks. It has not been in place long enough for the soil to have developed

distinct horizons. The native vegetation consists of oak, hickory, elm, beech, gum, and elder trees and an undergrowth of reeds and grasses.

Congaree silt loam (Ch).—This soil is open and friable. Air circulates freely through it, and plant roots easily penetrate it. The following profile was observed in a cultivated field 2.1 miles southwest of Chappells, in the bend of the river.

- A_p 0 to 7 inches, dark grayish-brown (10YR 4/2) silt loam; strong coarse granular structure; very friable; contains many fine roots and a few fine mica flakes; many small pores; clear smooth boundary; 5 to 10 inches thick.
- A_2 7 to 22 inches, dark-brown (7.5YR 4/4) silt loam; weak medium granular structure; friable; contains many fine roots and a few very fine mica flakes; many small pores; clear smooth boundary; 12 to 18 inches thick.
- C_1 22 to 33 inches, dark-brown (10YR 3/3) silty clay loam; weak medium angular blocky structure; friable; contains a few fine to medium roots and numerous fine mica flakes; a few fine to medium pores; clear smooth boundary; 8 to 15 inches thick.
- C_2 33 to 75 inches, dark-brown (10YR 3/3) silty clay loam mottled with dark yellowish brown (10YR 4/4); weak fine subangular blocky structure; friable; a few fine pores; contains numerous fine mica flakes; clear smooth boundary; 20 to 50 inches thick.
- C_3 75 inches +, dark-brown (7.5YR 3/2) fine sandy clay loam mottled with brown (10YR 5/3); massive; contains many fine mica flakes.

Included are small areas of dark-colored soil, areas where the substratum is dark colored and compact, and areas of soil that is mottled at a depth of 18 inches.

Use and management.—Some of this soil has been cleared and used for crops, hay, or pasture. Most of it is in forest. Part of it is still in hay and pasture, and a smaller part is in crops. A very small part is in nonfarm use.

In normal years this soil produces high yields of corn and small grains. The favorable moisture relations also make it productive of truck crops, dallisgrass, bermudagrass, fescue, whiteclover, and annual lespedeza. A crop may be lost every 3 or 4 years because of flooding. Ordinarily, runoff causes no serious damage.

This soil is responsive to fertilizer and is easy to keep in good tilth. It is important to maintain the supply of organic matter by turning under crop residues and green-manure crops. Capability unit 7 (IIw–2).

Congaree fine sandy loam (Cg).—This is a sandier soil than Congaree silt loam. It has rapid permeability and a lower capacity for available water. The following profile was observed in a cultivated field a quarter of a mile north of Peak.

- A_p 0 to 8 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; contains many fine roots, many fine and medium pores, and a few fine mica flakes; slightly acid; clear smooth boundary; 5 to 10 inches thick.
- A_2 8 to 30 inches, dark-brown (10YR 4/3) fine sandy loam; weak fine and weak medium granular structure; friable; contains many fine roots, a few small and medium pores, and a few fine mica flakes; medium acid; clear smooth boundary; 12 to 26 inches thick.
- A_3 30 to 43 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; weak coarse granular structure; friable; contains a few medium and fine roots, a few small pores, and some fine mica flakes; medium acid; clear smooth boundary; 9 to 16 inches thick. (This layer is absent in some places.)
- C_1 43 to 58 inches, yellowish-brown (10YR 5/6) fine sandy clay loam; faint, small, medium, dark-brown (10YR 4/3) mottles; weak fine subangular blocky structure; friable; a few fine and medium pores; contains many fine mica flakes; medium acid; clear smooth boundary; 10 to 20 inches thick.
- C_2 58 to 68 inches, dark grayish-brown (10YR 4/2) sandy loam; weak massive structure that can be crushed to coarse granular structure; very friable; many fine mica flakes; strongly acid; clear smooth boundary; 6 to 30 inches thick.
- C_3 68 to 73 inches, dark-brown (10YR 4/3), mottled with light yellowish brown (2.5Y 6/4), coarse sandy loam; weak massive structure; very friable; contains many fine mica flakes and many small water-rounded quartz pebbles; strongly acid.

Use and management.—Some of this soil has been cleared and used for crops, hay, and pasture. Much is in forest. Little is now cultivated, partly because of the flood hazard.

This soil responds to fertilization and additions of organic matter. It is easy to till. It is productive of truck crops, corn, dallisgrass, bermudagrass, fescue, whiteclover, and annual lespedeza, but it is less well suited to the grasses and ladino clover than Congaree silt loam. Capability unit 7 (IIw–2).

Davidson series

This series consists of deep, well-drained, gently sloping residual soils that occur on broad ridges in the uplands. The largest areas of Davidson soils in this county are south of Newberry and north of Little Mountain.

These soils are subject to sheet and gully erosion. They are slightly acid. They have a moderate supply of organic matter and are high in natural fertility. They have a moderate capacity for available moisture. In uneroded areas the surface soil is loam; in eroded areas it is clay loam.

The Davidson soils are associated with the Lloyd, Cecil, Mecklenburg, and Iredell soils. Their surface soil is redder and their subsoil darker red than that of the associated soils.

The parent material was residuum weathered from such dark-colored basic rocks as gabbro, diorite, and hornblende schist. The native vegetation consists of oak, hickory, dogwood, redcedar, holly, and pine trees and an undergrowth of vines, briers, and grasses.

Davidson loam, gently sloping phase (DaB).—Locally, this soil is called "push-dirt." The following profile was observed in a pine forest 2 miles northeast of the village of Little Mountain.

- A_p 0 to 6 inches, dusky-red (10R 3/2) loam; weak fine granular structure; friable; very sticky when wet, hard when dry; contains many fine roots; clear smooth boundary; 4 to 8 inches thick.
- B_1 6 to 16 inches, dark reddish-brown (2.5YR 3/4) clay loam; weak fine subangular blocky structure; friable; very sticky when wet; contains many fine roots; clear smooth boundary; 8 to 12 inches thick.
- B_2 16 to 43 inches, dark reddish-brown (2.5YR 3/4) clay; moderate medium subangular blocky structure; firm; very sticky when wet and hard when dry; clear smooth boundary; 20 to 36 inches thick.
- C_1 43 inches +, dark-red (2.5YR 3/6) clay loam; massive; very friable; contains a little fine quartz gravel, many dark-colored manganese concretions, and a few pieces of weathered basic rock; several feet to bedrock.

Small areas of Davidson clay loam and associated soils are included. The depth to the C horizon ranges from 36

to 108 inches or more. The thickness of the surface layer ranges from 4 to 10 inches, and the color of the surface layer varies from dusky red to dark red. There is wide variation in the thickness of the B horizon.

Use and management.—All of this soil has been cleared, and most of it is being used for crops and pasture. A part of the acreage is now in forest, and a small part is idle. This is one of the better agricultural soils of the county. It is suitable for all the commonly grown crops, especially for cotton, corn, soybeans, small grains, and truck crops. It is also very productive of grasses and legumes for hay and pasture—tall fescue, alfalfa, crimson clover, white clover, dallisgrass, bermudagrass, sericea lespedeza, and annual lespedeza.

This soil responds to good management. Management needs include moderately long rotations and adequate applications of lime and fertilizer. Potassium is particularly needed. Deep-rooted legumes should be included in the rotations. Capability unit 2 (IIe–1).

Durham series

The Durham series consists of deep, gently sloping to sloping, well drained to excessively drained soils of the uplands. They are acid and are low in natural fertility. The rate of infiltration is rapid, and permeability is moderate to moderately slow. The capacity for available moisture is low.

These soils generally have a grayish-brown surface soil that varies in texture from fine sandy loam to loamy sand. The surface layer varies in color, texture, and thickness because of the difference in degree of erosion in different areas. The typical subsoil is yellow, friable to firm sandy clay loam. It varies, however, in color, thickness, and degree of mottling because of variations in the degree of development and the influence of the adjoining soils.

The Durham soils are widely distributed but do not occur in the extreme northern part of the county or in the slate belt in the southern part. They occur with the Appling, Cecil, Colfax, Helena, and Worsham soils. In the B horizon they are lighter colored and coarser textured than the Cecil soils or the Appling soils. They do not have a moderately plastic subsoil like that of the Helena soils. They are higher and better drained than the Colfax and Worsham soils.

The parent material was weathered from granite. The native vegetation on the sandy loams consists of oak, hickory, dogwood, and pine trees; that on the loamy sands consists of oak, gum, sassafras, and pine trees.

Durham sandy loam, gently sloping phase (DbB).—This soil is permeable. Water, air, and plant roots penetrate the subsoil freely. There are a few large granite boulders that somewhat hinder tillage; otherwise, this soil is easy to work. Fragments of granite in the subsoil become more numerous with depth.

The following profile was observed on idle land 2 miles northeast of Newberry on the Mount Bethel-Garmany Road.

A_p 0 to 6 inches, grayish-brown (2.5Y 5/2) sandy loam; weak medium granular structure; very friable; contains many fine and medium roots and a few coarse single grains of sand; clear smooth boundary; 4 to 8 inches thick.

A_2 6 to 13 inches, yellow (10YR 7/8) sandy loam; weak coarse granular structure; very friable; contains many small and medium roots and a few small quartz pebbles; clear smooth boundary; 6 to 9 inches thick.

B_1 13 to 24 inches, yellowish-brown (10YR 5/4) sandy clay loam; moderate medium subangular blocky structure; friable; contains a few small roots and pores; clear smooth boundary; 8 to 14 inches thick.

B_2 24 to 38 inches, yellowish-brown (10YR 5/6) clay loam mottled with light red (2.5YR 6/8); breaks easily to weak coarse platy or coarse angular blocky structure, which then breaks to moderate medium subangular blocky structure; friable to firm; a few small pores; small and distinct mottles; clear smooth boundary; 10 to 14 inches thick.

B_3 38 to 46 inches, dark-brown (10YR 4/3) clay with medium, distinct mottles of light red (2.5YR 6/8) and brownish yellow (10YR 6/8); strong coarse angular blocky structure; firm; contains small fragments of disintegrated granite; clear smooth boundary; 7 to 11 inches thick.

C_1 46 inches +, dark-brown (10YR 4/3) sandy clay loam mottled with brownish yellow (10YR 6/6) and light red (2.5YR 6/6); massive; contains a considerable amount of disintegrated and weathered granite; 10 to 60 feet to bedrock.

Included are some areas of fine sandy loam, of coarse sandy loam, and of soil that has a deeper solum than is normal in this mapping unit. These areas are too small to map separately.

Use and management.—All of this soil has been cleared, and most of it is being used for crops and pasture. A part is in forest, and smaller parts are idle or in nonfarm use.

Because it is deep but rather droughty, this soil is fairly well suited to watermelons, peanuts, sweetpotatoes, and crotalaria. If heavily fertilized and supplied with organic matter, it is fairly productive of cotton, corn, and small grains.

This soil responds to good management, though fertilizer is rapidly leached out. Rotations should be of moderate length. Deep-rooted legumes included in the rotation will help to increase the permeability of the soil and the rate of infiltration. This reduces runoff and consequent erosion. This soil is moderately susceptible to erosion. Capability unit 3 (IIe–2).

Durham sandy loam, sloping phase (DbC).—This soil is not extensive, but it is widely distributed in the central part of the county. The slope range is 6 to 10 percent. Generally, this soil has shorter slopes and a thinner subsoil than Durham sandy loam, gently sloping phase, and is shallower to bedrock.

Use and management.—All of this soil has been cleared and used for crops and pasture. Part of it is now in forest, and part is still in crops or in pasture. A small part is idle or in nonfarm use.

This soil is suited to the same crops as Durham sandy loam, gently sloping phase, but it needs more careful management because of the greater erosion hazard. All tillage should be on the contour, and a complete water-disposal system, including terraces and grassed outlets, should be established. Rotations should be longer than on the gently sloping phase. Capability unit 9 (IIIe–2).

Durham loamy sand, gently sloping thick surface phase (DcB).—This soil occupies ridgetops and wide shelves. It is very droughty. Plant nutrients are leached from it rapidly. The following profile was observed 2 miles northwest of Newberry and south of U.S. Highway No. 76.

A_p 0 to 6 inches, grayish-brown (2.5Y 5/2) loamy sand; weak medium granular structure; very friable; contains many fine roots and a few small quartz pebbles; clear smooth boundary; 4 to 9 inches thick.

A_2 6 to 28 inches, olive (5Y 5/3) loamy sand; weak medium granular structure; very friable; contains many fine roots and a few fine mica flakes; clear wavy boundary; 18 to 26 inches thick.

B_1 28 to 49 inches, pale-yellow (2.5Y 7/4) sandy clay loam; weak medium subangular blocky structure; friable; contains scattered, small quartz pebbles and many fine mica flakes; clear wavy boundary; 18 to 26 inches thick.

C 49 inches, brownish-yellow (10YR 6/8) sandy clay mottled with light gray (10YR 7/1); almost massive; contains many fine mica flakes; 10 to 80 feet to bedrock.

In places the lower part of the A horizon is compacted or slightly cemented. The depth to the C horizon ranges from 36 to 62 inches.

Use and management.—All of this soil has been cleared. Most of it is now reverting to forest. Some is cropped, a little is in pasture, some is idle, and some is used for nonfarm purposes.

This soil is suited to watermelons, sweetpotatoes, corn, oats, crotalaria, and velvetbeans. These crops should be grown in moderately long rotations with grasses and legumes. Kudzu, bahiagrass, bermudagrass, and sericea lespedeza are suitable plants for hay and pasture. To obtain fairly good yields, it is necessary to lime and fertilize heavily. Capability unit 6 (IIs–1).

Durham loamy sand, sloping thick surface phase (DcC).—This is not an extensive soil. It occupies ridgetops and wide shelves. It is more susceptible to erosion than Durham loamy sand, gently sloping thick surface phase, with which it is associated. The slope range is 6 to 10 percent.

Use and management.—All of this soil has been cleared and used for crops. Much of it is now in trees, chiefly pines. Small acreages are in crops and pasture. Other small parts are either idle or in nonfarm use.

This soil responds to good management. Well-constructed terraces and drainage outlets should be part of the water-disposal system. Rotations, contour tillage, and stripcropping on the longer slopes are helpful in preventing erosion. Two-thirds of the acreage should be in close-growing crops. Manure and cover crops are needed to maintain a moderate supply of organic matter. Plant nutrients needed are nitrogen, phosphorus, and potassium. Capability unit 9 (IIIe–2).

Efland series

The soils of the Efland series are deep, moderately well drained, and gently sloping to sloping. They are strongly acid. They contain little organic matter but are moderately high in natural fertility. The rate of infiltration is slow, and the permeability is moderately slow to slow. The moisture-holding capacity is moderate. Runoff is rapid, and internal drainage is slow. These soils have a thin surface soil of silt loam or silty clay loam.

The Efland soils occur in the slate belt, with the Georgeville, Herndon, Tirzah, Alamance, Orange, and Goldston soils. They are deeper and better drained than the Orange soils. They are deeper than the Goldston soils and have a better developed profile. Efland soils are considered analogs of the Mecklenburg soils.

The parent material was derived from basic slate or massive metamorphic rocks that occurred with the Carolina slates. The native vegetation consists of oak, hickory, gum, pine, and redcedar trees.

Efland silt loam, gently sloping phase (EaB).—The following profile was observed in a cultivated field about 3 miles southeast of St. Lukes Church.

A_p 0 to 4 inches, dark-brown (10YR 4/3) silt loam; weak fine granular structure; very friable; contains many fine roots, many small dark-colored pebbles, and few small to medium-sized stones; clear smooth boundary; 3 to 9 inches thick.

B_1 4 to 16 inches, yellowish-red (5YR 4/8) silty clay; moderate medium angular blocky structure; friable; contains many fine roots and a few small dark-colored pebbles; strongly acid; clear smooth boundary; 10 to 16 inches thick.

B_2 16 to 25 inches, yellowish-red (5YR 4/8) clay mottled with yellowish brown (10YR 5/6); strong medium angular blocky structure; firm; contains a few small dark-colored pebbles; clear smooth boundary; 7 to 12 inches thick.

B_3 25 to 39 inches, yellowish-brown (10YR 5/8) clay mottled with olive gray (5Y 5/2); strong coarse angular blocky structure; firm; contains some small fragments of weathered Carolina slates; clear smooth boundary; 12 to 18 inches thick.

C 39 inches +, light olive-brown (2.5Y 5/6) silty clay mottled with olive gray (5Y 5/2); massive; contains many fragments of disintegrated weathered Carolina slates; the depth to bedrock varies from about 4 to 20 feet.

The surface layer varies in color from grayish brown to very dark brown and in thickness from 3 to 9 inches. In places where this soil is adjacent to the Herndon and Alamance soils, the subsoil has more pronounced mottles of brown to yellowish brown.

Use and management.—Practically all this soil has been cleared, and some is being used for crops and pasture. A part of the acreage is in forest, and a small part is idle.

This soil is well suited to corn, cotton, soybeans, small grains, dallisgrass, bermudagrass, tall fescue, whiteclover, and annual lespedeza. It responds to good management. Row crops should be rotated with legumes. They should be adequately limed and fertilized. Heavy and regular liming and fertilizing are necessary to maintain a good pasture sod. Capability unit 4 (IIe–3).

Efland silt loam, eroded sloping phase (EaC2).—This is a deep, moderately well drained soil. The slope range is 6 to 10 percent. The slopes are shorter than those of Efland silt loam, gently sloping phase. The surface soil varies in texture from silt loam to clay loam. It is 3 to 5 inches thinner than that of the uneroded phase. Runoff is greater than on Efland silt loam, gently sloping phase, infiltration is slower, and tilth is harder to maintain.

Use and management.—Practically all of this soil has been cleared and used for crops or pasture. A considerable acreage is now in forest. A small part is idle, and a small part is still used for crops and pasture.

This soil is suited to the same row crops, grasses, and legumes as Efland silt loam, gently sloping phase. If it is used for row crops, intensive conservation practices are needed to prevent further erosion. Terraces and water-disposal areas are needed. Rotations should be longer than on the gently sloping phase. Tillage should be on the contour. On the longer slopes, stripcropping will help to conserve soil and water. Liberal applications of lime and fertilizer are needed. Capability unit 10 (IIIe–3).

Enon series

The Enon series consists of acid, deep to moderately deep, moderately well drained to well drained soils. The slopes are gentle to moderately steep.

These soils are low in fertility. They have only a small supply of organic matter. The rate of infiltration is moderate, and permeability is moderately slow. The moisture-holding capacity is moderate.

The texture of the surface soil ranges from sandy loam to clay loam. The color varies from light gray to brown; the thickness, from 3 to 14 inches. The color of the subsoil varies from yellowish brown to yellowish red to reddish brown. In some places there are mottles and streaks. The surface soil and subsoil are more variable in color than those of any other soil in the county. The depth to the parent material ranges from 16 to 50 inches, and the depth to bedrock from 2 to more than 40 feet.

These soils are widely distributed throughout the county, except in the Carolina slate belt in the southern part. Near Whitmire, they occur largely on the lower slopes, in the heads of draws, and in the natural drainageways. In other parts of the county, they occupy relatively higher positions. They occur with the Cecil, Lloyd, Cataula, Appling, Mecklenburg, Helena, Iredell, Worsham, and Wilkes soils. They differ from the Appling, Cecil, and Lloyd soils in color and drainage. They are better drained and less plastic than the Iredell soil. They are deeper than the Wilkes soils and have more distinct horizons. They occupy higher positions than the Worsham soils and differ from them in color and drainage.

The parent material was residuum weathered from basic rocks and, to a lesser extent, from acidic rocks. The native vegetation consists of oak, hickory, gum, dogwood, elm, persimmon, cedar, and pine trees and an undergrowth of briers and vines.

Enon sandy loam, gently sloping phase (EbB).—The following profile was observed on Hartford Road, 3 miles southeast of Newberry, in cutover woods of pine, elm, oak, and cedar.

- A_1 0 to 1 inch, very dark grayish-brown (10YR 3/2) sandy loam; weak fine crumb structure; very friable; contains many fine roots; high in organic matter; clear smooth boundary; 1 to 7 inches thick.
- A_2 1 to 7 inches, brown (10YR 4/3) sandy loam; weak fine crumb structure; very friable; contains many fine roots, several medium-sized iron concretions, and a few quartz pebbles; abrupt smooth boundary; 4 to 10 inches thick.
- B_2 7 to 30 inches, strong-brown (7.5YR 5/6) clay; moderate fine subangular blocky structure; distinct clay skins; very firm when moist, very hard when dry, very plastic and sticky when wet; contains a few fine and medium roots, a few iron concretions, and some fine gravel; clear smooth boundary; 14 to 30 inches thick.
- B_3 30 to 36 inches, light olive-brown (2.5YR 5/4) clay; moderate fine subangular blocky structure; very hard when dry, very firm when moist, plastic and slightly sticky when wet; contains a few medium-sized quartz fragments and iron concretions; gradual smooth boundary; 4 to 8 inches thick.
- C_1 36 to 48 inches, olive (5Y 5/4) clay and partially weathered basic rock; massive; contains some fragments of soft basic rock and a few quartz fragments; 10 to 24 inches thick; 2 to 40 feet to bedrock.

Use and management.—Most of this soil has been cleared and used for crops and pasture. A large part of it is in forest that consists mostly of pines. Some is used for crops or pasture. A small part is idle, and a small part is in nonfarm use.

If adequately limed and fertilized and otherwise well managed, this soil will produce average yields of cotton, corn, soybeans, and small grains and better than average yields of tall fescue, whiteclover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. Capability unit 4 (IIe–3).

Enon sandy loam, eroded gently sloping phase (EbB2).—This inextensive soil occurs chiefly on narrow ridgetops and shelves near steeper Enon and Wilkes soils. The surface layer is 3 to 5 inches thick. It is a mixture of former subsoil and surface soil. In a few places all of the original surface soil has been removed by erosion and the clay loam beneath it is exposed. The solum is 4 to 10 inches thinner than that of the uneroded gently sloping phase of Enon sandy loam. The rate of infiltration is slower because of the finer texture of the surface layer. Runoff is greater, and the erosion hazard is more serious.

Use and management.—Most of this soil has reverted to forest or has been planted to forest. Pine trees predominate. Some of the acreage is in crops, and some is in pasture. A small acreage is idle or in nonfarm use.

This soil is suitable for cotton, corn, soybeans, small grains, tall fescue, whiteclover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. It needs to be limed and fertilized. If cultivated, it should be strip-cropped and two-thirds should be in close-growing crops. Rotations should be 3 to 6 years long. A grass-base rotation is a practical means of controlling erosion. Tillage should be on the contour, and there should be terraces and grassed waterways.

If well fertilized, bicolor lespedeza can be grown to provide food for wildlife. Capability unit 10 (IIIe–3).

Enon sandy loam, sloping phase (EbC).—The slope range of this soil is from 6 to 10 percent. The texture of the surface soil varies from sandy loam to gravelly sandy loam, and the thickness varies from 4 to 14 inches. The subsoil is 12 to 40 inches thick. It is hard when dry and sticky when wet. Its color varies from yellowish brown to reddish brown. Mottling, splotching, and streaking are common. The depth to bedrock ranges from 2 to 20 feet. This soil is more susceptible to erosion than Enon sandy loam, gently sloping phase.

Use and management.—Most of this soil is in forest, crops, or pasture. A very small part is idle or in nonfarm use.

This soil is suited to cotton, corn, soybeans, small grains, tall fescue, bermudagrass, dallisgrass, crimon clover, white clover, sericea lespedeza, and annual lespedeza. It will produce average yields if adequately limed and fertilized. It responds to lime and fertilizer. To help control erosion and to supply organic matter, green-manure crops should be grown two-thirds of the time in 3- to 6-year rotations. Crop residues should be turned under. Bicolor lespedeza can be grown to provide food for wildlife. Capability unit 10 (IIIe–3).

Enon sandy loam, eroded sloping phase (EbC2).—This soil occurs on breaks next to more gently sloping Enon soils and other associated soils. The slope range is 6 to 10 percent. Because of differences in degree of erosion, the texture of the surface soil varies from gravelly sandy loam to clay loam. In most places the plow layer is 3 to 5 inches thick and is a mixture of former surface soil and subsoil material. The subsoil is 12 to 36 inches thick. Its color varies from yellowish brown to red. The depth to bedrock ranges from 2 to 10 feet.

Because of the finer textured surface soil and the stronger slopes, this soil has greater and faster runoff than Enon sandy loam, eroded gently sloping phase, and is more severely eroded.

Use and management.—Most of this soil has been cleared and cropped. Now, most of it is in forest. A small acreage is in crops or pasture, and a very small acreage is either idle or in nonfarm use.

This soil is best suited to pine forest. It responds to liming and fertilizing, but, because of the severe erosion hazard, crops normally are not grown. Lime and fertilizer are needed to maintain fair stands of grasses and legumes. Suitable plants are bermudagrass, whiteclover, sericea lespedeza, and annual lespedeza. Bicolor lespedeza grown to provide food for wildlife also needs to be fertilized. Capability unit 15 (IVe–2).

Enon sandy loam, strongly sloping phase (EbD).—This soil has a slope range of 10 to 15 percent. The surface soil is 3 to 12 inches thick. It varies in texture from gravelly sandy loam to sandy loam. The color of the subsoil varies from yellowish brown to red. Mottling is not so prevalent as in the subsoil of Enon sandy loam, gently sloping phase. This soil has shorter slopes than the gently sloping phase but is more susceptible to erosion. The depth to bedrock ranges from 2 to 10 feet.

Use and management.—Some of this soil has been cleared in recent years. Some is in forest of hardwoods and pines, and some of the cleared acreage has reverted to pines. A small acreage is in crops or pasture, and a very small acreage is idle or in nonfarm use.

This soil is suited to forest. If it is cropped, the rotations should be long and close-growing crops should be grown three-fourths of the time. If it is used for pasture, liberal applications of lime and fertilizer are needed to maintain a sod. Only a fair carrying capacity can be expected. Bicolor lespedeza grown to provide food for wildlife should be fertilized. Capability unit 15 (IVe–2).

Enon sandy loam, eroded strongly sloping phase (EbD2).—This soil occurs most commonly on breaks along small and medium-sized streams and next to more gently sloping Enon soils and associated soils. The slope range is 10 to 15 percent The 2- to 4-inch surface layer is a mixture of former surface soil and subsoil. Its texture varies from gravelly sandy loam to clay loam. The subsoil is 12 to 30 inches thick. The depth to bedrock ranges from 2 to 8 feet. Small areas of Wilkes soils are included in this mapping unit.

Use and management.—Most of this soil is in forest that consists mostly of pines. A small acreage is in crops or pasture or is idle.

This soil is unsuitable for crops because of its strong slopes, erodibility, and low fertility. It is difficult to cultivate and of only limited use for grazing. It will produce fair yields of grasses and legumes if it is adequately limed and fertilized. Suitable pasture plants are bermudagrass, sericea lespedeza, and annual lespedeza. Bicolor lespedeza grown to provide food for wildlife should be fertilized. Capability unit 21 (VIe–4).

Enon sandy loam, moderately steep phase (EbE).—This soil occurs in narrow areas on breaks along the medium-sized and large streams, in close association with the Wilkes soils and with more gently sloping Enon soils. The slope range is 15 to 25 percent. Included is a small area in which the slope is steeper than 25 percent. The surface soil is 3 to 10 inches thick. Its texture varies from gravelly sandy loam to sandy loam. The subsoil is 12 to 24 inches thick. Its color is yellowish brown or red. The depth to bedrock ranges from 2 to 5 feet. The hazard of erosion is serious.

Use and management.—Most of this soil is in forest of hardwoods and pines. Some is in pine forest, and a very small acreage is in pasture or is idle.

Because of the steep slopes and the hazard of erosion, this soil is unsuitable for crops. Pasture sods are hard to maintain, even if heavily fertilized, and yields are only fair. Capability unit 21 (VIe–4).

Enon sandy loam, eroded moderately steep phase (EbE2).—This soil is distributed on steep breaks along the large and medium-sized streams. It is associated with the Wilkes soils. The slope range is generally 15 to 25 percent. In some small areas, the gradient is more than 25 percent. The slopes are shorter than those of Enon sandy loam, gently sloping phase. In some places the surface soil has been removed, and in others it ranges up to 6 inches in thickness. The texture of the present surface soil varies from gravelly sandy loam to clay loam. The subsoil is yellowish brown or red and is 10 to 20 inches thick. This soil is 2 to 6 feet deep to bedrock.

Use and management.—Most of this soil is in forest. A very small acreage is in pasture or is idle. Steep slopes, rapid runoff, and low fertility make this soil unsuitable for crops. It is of very limited use for pasture. Capability unit 24 (VIIe–3).

Georgeville series

The Georgeville series consists of deep, well-drained, gently sloping to moderately steep soils that overlie Carolina slates. These soils are acid. They are low in organic matter and plant nutrients. Infiltration is slow, and permeability and available moisture capacity are moderate.

The color of the surface soil is very dark brown. The texture varies from very fine sandy loam to clay. Silt loam is the dominant texture. Where erosion has been active, the color is reddish brown. The subsoil is dark-red silty clay. The depth to bedrock ranges from 2 to 6 feet. Sheet erosion is common on these soils.

Georgeville soils are found throughout the slate belt. They are important agricultural soils in that part of the county. They occur with the Tirzah, Herndon, Alamance, and Goldston soils. They are not so dark brown in the surface soil as the Tirzah soils, nor so dark red in the subsoil. They are redder and better drained than the Herndon and Alamance soils. They are deeper than the Goldston soils and have more distinct horizons. They are less susceptible to gully erosion than the Cecil soils.

The parent material was residuum weathered from Carolina slates. The soils formed under forest. The native trees are oak, hickory, pine, cedar, gum, dogwood, holly, and sourwood. The undergrowth consists of shrubs, vines, briers, and grasses.

Georgeville silt loam, gently sloping phase (GaB).—The following profile was observed on State Highway No. 391, 5 miles south of Prosperity.

A$_0$ 1 to 0 inch, very dark brown (10YR 2/2) partially decomposed organic matter, leaf mold, and forest litter in woodland areas; 1 to 4 inches thick.

A_1 0 to 4 inches, dark grayish-brown (10YR 4/2) silt loam; weak medium granular structure; very friable; contains many fine and medium roots and a few small quartz pebbles; clear smooth boundary; 2 to 6 inches thick.

A_2 4 to 7 inches, dark-brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; contains a moderate number of small roots and a few small quartz pebbles; clear smooth boundary; 3 to 6 inches thick.

B_1 7 to 10 inches, yellowish-red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; contains a few small roots; clear smooth boundary; 2 to 6 inches thick.

B_2 10 to 25 inches, red (2.5YR 4/6) silty clay; moderate coarse subangular blocky structure; friable; contains a few large quartz pebbles; clear smooth boundary; 10 to 20 inches thick.

B_3 25 to 40 inches, yellowish-red (5YR 5/8) silty clay mottled with pale olive (5Y 6/4); some of the mottled effect is produced by fragments of parent material; moderate medium subangular blocky structure; friable; contains many fine pebbles and fragments of schist and weathered Carolina slates; clear smooth boundary; 10 to 18 inches thick.

C 40 inches +, yellowish-red, weathered Carolina slates that are mottled or streaked with brownish yellow and gray; 3 to 40 feet to bedrock.

In places there are fragments of weathered and partially decomposed Carolina slates on the surface and in the surface soil. These fragments are not large enough or numerous enough to interfere with tillage.

Use and management.—Most of this soil has been cleared and used for pasture and crops. It has been cropped most of the time to cotton. Some of the acreage is now in crops, some is in pasture, and some is in forest consisting predominantly of pines. A small acreage is idle, and a small acreage is in nonfarm use.

Cotton, corn, soybeans, small grains, fescue, white clover, crimson clover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza are suitable crops. This soil responds to moderate to liberal applications of lime and fertilizer. Rotations should be of moderate length and should include deep-rooted legumes to supply nitrogen and improve aeration and permeability. Crop residues and green-manure crops must be utilized. Capability unit 2 (IIe–1).

Georgeville silt loam, sloping phase (GaC).—This soil occurs on breaks next to the more gently sloping Georgeville soils and associated soils. The slope range is 6 to 10 percent. The slopes are shorter than those of Georgeville silt loam, gently sloping phase. The texture of the surface soil varies from fine sandy loam to gravelly silt loam. The thickness of the surface soil ranges from 3 to 12 inches. The thickness of the subsoil ranges from 30 to 48 inches, and the color is mostly red. The depth to bedrock ranges from 3 to 10 feet. Runoff is more rapid than on Georgeville silt loam, gently sloping phase; consequently, the erosion hazard is greater.

Use and management.—Some of this soil is in crops, some is in pasture, and some is in forest consisting chiefly of pines. A little is idle or in nonfarm use.

This soil is suited to cotton, corn, soybeans, and small grains. It is good for hay and pasture if limed and fertilized. When properly managed, it is productive of tall fescue, crimson clover, white clover, bermudagrass, dallisgrass, bahiagrass, sericea lespedeza, and annual lespedeza. Bicolor lespedeza can be grown to provide food for wildlife.

This soil responds to liming and fertilization. Rotations should be 3 to 6 years long. Stripcropping, contour tillage, terracing, and grassed waterways will help to conserve soil and water. Capability unit 8 (IIIe–1).

Georgeville silt loam, strongly sloping phase (GaD).—This soil occupies breaks along the medium-sized and large streams, next to areas of more gently sloping Georgeville soils and associated soils. The slope range is 10 to 15 percent. The slopes are short. A small area has slopes of more than 15 percent. The texture of the surface soil varies from gravelly silt loam to silt loam. The gravelly areas are small, and the gravel does not interfere with cultivation. Small areas are included in this mapping unit that contain fragments of slate rock. The subsoil is 14 to 36 inches thick.

Use and management.—Most of this soil is in forest. Small acreages are in crops or pasture, and a little is idle or in nonfarm use.

This soil is unsuitable for crops because it is erodible and because its strong slopes are hard to cultivate. If liberally limed and fertilized, it can be used for pasture. It will produce average yields of forage. Grazing should be controlled so as to maintain stands of grasses and legumes that will help prevent erosion. Bicolor lespedeza provides average yields of food for wildlife. Capability unit 14 (IVe–1).

Georgeville silty clay loam, eroded gently sloping phase (GbB2).—This soil generally occurs on ridges and shelves in the Carolina slate belt. The present surface layer is a mixture of subsoil material and remnants of the former surface soil. The texture of the surface layer varies from fine sandy loam to clay. The color varies from grayish brown to red. The thickness ranges from 2 to 5 inches. The subsoil is 2 to 4 feet thick. The rate of infiltration is slower and runoff is greater than on Georgeville silt loam, gently sloping phase.

Small areas of gravelly silt loam are included, but the gravel is not sufficiently abundant to interfere with tillage. Also included are some small areas where fragments of Carolina slate rock are mixed with the surface soil.

Use and management.—All of this soil has been cleared. Much of the time it has been cropped to cotton. Some of it is now cropped, some is in pasture, and a small part is idle or in nonfarm use. Part of it has reverted to a predominantly pine forest, and some has been planted to trees.

Cotton, corn, soybeans, small grains, tall fescue, white clover, crimson clover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza are suitable crops. Bicolor lespedeza can be grown in field borders and in small openings in the woods to provide food for wildlife.

This soil responds to liming and fertilization. Crops should be grown in contour strips, and two-thirds of the soil ought to be in close-growing crops. Tillage should be on the contour. Terraces and grassed waterways are needed. Rotations should be 3 to 6 years long. Capability unit 8 (IIIe–1).

Georgeville silty clay loam, eroded sloping phase (GbC2).—This soil is on breaks next to the gently sloping phases of Georgeville silt loam and silty clay loam and associated soils. It occurs in elongated areas that follow the drainage pattern. The slope range is 6 to 10 percent. The texture of the surface soil varies from gravelly silt

loam to clay loam. The color varies from grayish brown to red. In most areas former surface soil and subsoil are mixed to a depth of 3 to 5 inches. In some small areas fragments of slate rock are mixed with the soil in this layer. The subsoil is 24 to 42 inches thick. The depth to bedrock is 30 to 48 inches.

Use and management.—Most of this soil is in a predominantly pine forest. There is a small acreage in crops and a small acreage in pasture. A very small acreage is idle or in nonfarm use.

Because of the serious hazard of erosion, this soil is unsuited to crops unless they are grown in a rotation 4 to 8 years long. Crops should be grown in contour strips, and three-fourths of the soil should be in close-growing crops at all times. A deep-rooted legume, such as sericea lespedeza, provides average yields of forage if liberally limed and fertilized. Bicolor lespedeza grown to provide food for wildlife needs to be fertilized. Capability unit 14 (IVe–1).

Georgeville silty clay loam, severely eroded sloping phase (GbC3).—This soil occurs in elongated areas along drainageways, next to gently sloping Georgeville soils and associated soils. The slope range is 6 to 10 percent. The texture of the surface soil ranges from silty clay loam to clay. The color is reddish brown to brown. The subsoil is 12 to 30 inches thick. In some small areas the surface soil and 6 to 12 inches of the subsoil have been lost through erosion. Shallow gullies are common. This soil contains fragments of slate rock, but not enough to interfere with tillage.

Use and management.—Most of this soil is in a predominantly pine forest. A small acreage is in pasture, and a small acreage on the backwaters of Lake Murray is idle. This backwater area is covered with water part of the time.

The serious erosion hazard makes this soil unsuitable for crops. If lime and fertilizer are applied and grazing is controlled, this soil is fairly productive of forage. Bicolor lespedeza grown to provide food for wildlife needs to be fertilized. Capability unit 19 (VIe–2).

Georgeville silty clay loam, severely eroded strongly sloping phase (GbD3).—This soil is distributed along medium-sized and large streams and along the strongly sloping shores of Lake Murray. The slope range is 10 to 15 percent. The slopes are short. A small area has slopes of more than 15 percent. The texture of the surface soil varies from gravelly silty clay loam to clay loam. The color of the surface soil varies from brown to red, and the thickness ranges from 2 to 4 inches. In some small areas the present surface layer is a mixture of former subsoil and remnants of the original surface soil. The subsoil is yellowish red to red and is 8 to 18 inches thick. Fragments of Carolina slates are common in this soil.

This soil is closely associated with the shallow Goldston soils. Small areas of these soils are included in this mapping unit.

Use and management.—This soil is mostly forested or idle. It is not suitable for crops, because of its strong slopes and erodibility. It is suited to pasture if grazing is limited. Yields of bicolor lespedeza are poor unless the plantings are heavily fertilized. Capability unit 19 (VIe–2).

Goldston series

The Goldston series consists of sloping to strongly sloping, shallow to moderately shallow, well-drained, acid soils that occupy short slopes and narrow ridges or knobs in the slate belt. These soils are very low in fertility and contain little organic matter. Infiltration and permeability are slow. The capacity for available moisture is low.

The texture of the surface soil varies from gravelly silt loam to silty clay loam. Where the original surface layer has been removed by erosion, the texture is silty clay loam. The gravel consists of fragments of quartz and slate. In some areas there is enough of it to interfere somewhat with tillage. The solum is only 12 inches deep in a few places, but it is as much as 36 inches deep in others. The depth to bedrock ranges from 18 to 48 inches.

Goldston soils occur with Georgeville, Herndon, Efland, Alamance, and Orange soils. They have a shallower solum and less distinct horizons than the adjacent soils.

The parent material was weathered from Carolina slates and dark-colored rocks. The native vegetation consists of oak, hickory, sourwood, cedar, and pine trees and an undergrowth of shrubs and grasses.

Goldston silt loam, sloping phase (GcC).—The water-holding capacity of this soil is low. Good tilth is hard to maintain. Fragments of Carolina slates and dark-colored rocks are found throughout the profile. White quartz pebbles and small stones are common but, except in a few places, are not numerous enough to interfere with tillage. The following profile was observed in an old field 10 miles southeast of Prosperity.

- A_p 0 to 8 inches, grayish-brown (10YR 5/2) silt loam; weak fine granular structure; very friable; contains many fine roots, a few small quartz pebbles, and a few thin flakes and fragments of Carolina slates; abrupt smooth boundary; 2 to 12 inches thick.
- B_2 8 to 12 inches, light brownish-gray (2.5Y 6/2) silty clay loam mottled with olive yellow (5Y 6/8); moderate medium subangular blocky structure; friable; contains a few fine and medium roots and some flakes and fragments of Carolina slates; clear smooth boundary; 0 to 7 inches thick.
- C 12 to 16 inches, red (2.5YR 5/6) weathered slate material mottled with yellowish red (5YR 5/8) and grayish brown (10YR 5/2); abrupt smooth boundary; 2 to 12 inches thick.
- D 16 inches +, Carolina slate bedrock that varies from gray to red.

The surface soil varies from light grayish brown to reddish brown. The subsoil ranges from 2 to 12 inches in thickness and from olive yellow to reddish brown in color. In some areas there is no B horizon.

Use and management.—Most of this soil is in forest. Small parts are in pasture or are idle.

Fair yields are obtained of cotton, corn, small grains, tall fescue, white clover, crimson clover, bermudagrass, dallisgrass, and annual lespedeza. This soil is responsive to liming and fertilizing. Capability unit 16 (IVe–4).

Goldston silt loam, strongly sloping phase (GcD).—This soil occurs along the backwaters of Lake Murray and along the large nearby streams. The slope range is generally 10 to 15 percent. A few slopes are steeper than 15 percent. The texture of the surface soil varies from gravelly silt loam to silty clay loam. In some small areas the soil contains medium-sized stones. In some places, there is a very thin layer of subsoil; in others, the

surface soil is directly over the parent material; and in still others, it directly overlies the parent rock. The depth to bedrock is 18 to 48 inches.

Use and management.—Some of this soil is in forest, and some, near the backwaters of Lake Murray, is idle. These strong slopes should be covered with vegetation at all times to prevent erosion. Capability unit 16 (IVe–4).

Helena series

The Helena series consists of deep, strongly acid, gently to strongly sloping, moderately well drained to somewhat poorly drained soils.

These soils are low in fertility. They contain little organic matter. The rate of infiltration is moderate, and permeability is moderately slow. The available moisture capacity is moderate. There is considerable variation in the consistence of the subsoil.

The largest areas of Helena soils in Newberry County are in the vicinity of Silverstreet and Prosperity. Other areas are scattered in a band that runs east and west through the central part of the county. These soils occur with Cecil, Appling, Durham, Colfax, Worsham, and Wilkes soils. They are more slowly permeable and less well drained than the Cecil, Appling, and Durham soils, and they further differ from these soils in having a more plastic subsoil. They are higher and better drained than the Colfax and Worsham soils. They have a deeper, more strongly developed profile than the Wilkes soils.

The parent material was residuum weathered from acidic and basic rocks—aplitic granite and quartz diorite. The color of the parent material varied from yellowish brown to gray. Some of it was greenish. The native vegetation consists of oak, gum, elm, and pine trees.

Helena sandy loam, gently sloping phase (HaB).—The following profile was observed in a cultivated field half a mile east of Silverstreet.

- A_p 0 to 7 inches, pale-olive (5Y 6/4) sandy loam; weak fine granular structure; very friable; contains many fine roots, a few small quartz pebbles, and a few medium-sized, dark-colored concretions; abrupt clear boundary; 4 to 9 inches thick.
- A_2 7 to 16 inches, pale-olive (5Y 6/3) sandy loam; weak fine granular structure; very friable; contains many small roots and a few medium-sized quartz pebbles; clear smooth boundary; 7 to 12 inches thick.
- B_1 16 to 27 inches, pale-olive (5Y 6/4) sandy clay loam; weak fine to medium subangular blocky structure; friable; contains a few fine roots and a few quartz pebbles; clear smooth boundary; 5 to 12 inches thick.
- B_2 27 to 37 inches, yellowish-brown (10YR 5/6) clay; common, medium, prominent mottles of light yellowish brown (2.5Y 6/4); moderate medium angular blocky and subangular blocky structure; firm when moist, hard when dry, and moderately plastic and sticky when wet; contains a few quartz pebbles and feldspar crystals; clear smooth boundary; 5 to 15 inches thick.
- C_1 37 inches +, yellowish-brown (10YR 5/6) partially weathered granite mottled with light brownish gray (2.5Y 6/2), red (2.5Y 5/8), and light gray (2.5Y 7/0); massive; contains seams and lenses of clay that feels slick and smooth; 5 to 60 feet to bedrock.

Small areas of coarse sandy loam, gravelly sandy loam, and fine sandy loam are included.

The surface layer varies in color from pale olive to brown. Generally its thickness ranges from 7 to 18 inches, but there are small patches where all the surface soil has been lost through erosion.

The subsoil varies in color from pale olive to gray. It has very distinct mottles of red, brown, and yellow. The thickness of the subsoil ranges from 22 to 36 inches, and the consistence ranges from friable to firm. The depth to bedrock ranges from 5 to 60 feet.

Use and management.—All of this soil has been cleared, and most of it is being used for crops and pasture. A part is in forest, a small part is idle, and a small part is in nonfarm use.

This soil is suitable for cultivation and is responsive to good management. It needs to be protected against erosion. Cotton, corn, soybeans, small grains, tall fescue, whiteclover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza are suitable crops. Rotations should be moderately long and should include deep-rooted legumes. Liberal amounts of lime and fertilizer are needed. Capability unit 4 (IIe–3).

Helena sandy loam, sloping phase (HaC).—Most of this inextensive soil is on breaks next to areas of more gently sloping Helena soils and associated soils. The slopes range from 6 to 10 percent. They are shorter than those of Helena sandy loam, gently sloping phase. Runoff is more rapid, and erosion is a greater hazard.

Use and management.—Most of this soil has been cleared and used for crops and pasture. A part is in forest, and a small part is idle or in nonfarm uses.

All of this soil is suitable for cultivation. It is suited to the same crops as Helena sandy loam, gently sloping phase. It is more erodible than the gently sloping phase and needs more intensive conservation practices if used for crops. It also needs longer rotations and heavier applications of lime and fertilizer. Where practicable, this soil should be stripcropped. Deep-rooted legumes should be included in the rotation. If liberally limed and fertilized and otherwise well managed, this soil is suited to tall fescue, bermudagrass, dallisgrass, whiteclover, and annual lespedeza for hay and pasture. Capability unit 10 (IIIe–3).

Helena sandy loam, eroded sloping phase (HaC2).—This is not an extensive soil. Its 4- to 5-inch surface layer, a mixture of former surface soil and subsoil, is predominantly pale-olive sandy loam to sandy clay loam. There are a few patches where the plow layer is nearly all subsoil material. The infiltration rate is slower, runoff is greater, and the capacity for available moisture is lower than in the uneroded sloping phase of Helena sandy loam. The depth of this soil is somewhat less than that of the uneroded phases.

Use and management.—All of this soil has been cultivated, but now practically all of it is in forest. A small acreage is still cultivated, a little is in pasture, and a little is idle or in nonfarm use.

This soil will produce fair yields of corn, soybeans, small grains, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. It responds to liming, fertilizing, and other good management practices. Erosion is a considerable hazard. If this soil is cultivated, it should be stripcropped on the contour. All natural drainageways should be sodded. Rotations should be 4 to 6 years long and should include deep-rooted legumes. Liberal fertilization will help preserve good permanent sod for hay and pasture. Capability unit 15 (IVe–2).

Helena sandy loam, eroded strongly sloping phase (HaD2).—This is an inextensive soil. Its slope range is

generally 10 to 15 percent. A small area has slopes ranging up to 25 percent. In most places the surface layer is a mixture of former surface soil and the subsoil. To a depth of 4 or 5 inches, it is pale-olive sandy loam to sandy clay loam. There are a few scattered, small gullies. This soil is not so deep to bedrock as the gently sloping or sloping phases of Helena sandy loam.

Use and management.—Some of this soil has been cultivated, but most of it is now in forest. A very small acreage is idle or in pasture.

This soil is not well suited to cultivated crops. It is suited to bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. It needs to be liberally limed and fertilized. If it is used for pasture, grazing should be controlled. The strong slopes are hard to work and are likely to erode further if cultivated. Capability unit 15 (IVe–2).

Helena loamy sand, gently sloping thick surface phase (HbB).—This soil occurs with Wilkes, Enon, Iredell, and Appling soils. All of it is west of Newberry, near the town of Gary and Bush River Church. It has a thicker A horizon than the adjacent soils and differs from them further in having a cemented A_3 horizon. The native vegetation consists of gum, persimmon, pine, and scrub oak trees.

This soil is low in fertility. It is strongly acid throughout, and it contains only a little organic matter. Runoff is very rapid, and internal drainage is moderately slow. Infiltration is rapid, and permeability is moderately slow. The available moisture capacity is low.

The following profile was observed about a mile south of Gary.

A_p 0 to 6 inches, grayish-brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; contains many fine roots and a few large sand grains and small quartz pebbles; clear smooth boundary; 4 to 9 inches thick.

A_2 6 to 17 inches, light brownish-gray (2.5Y 6/2) loamy sand mottled with yellowish brown (10YR 5/6); weak fine granular structure; very friable; contains many fine roots, a few dark-colored fine concretions of iron, and many small quartz pebbles.

A_3 17 to 30 inches, light brownish-gray (2.5Y 6/2) sandy loam; medium, distinct mottles of yellowish brown (10 YR 5/6); cemented in place; massive but crushes easily to coarse granules; friable; contains many fine quartz pebbles, a few medium-sized pebbles, and many dark iron concretions; clear smooth boundary; 10 to 16 inches thick.

B_1 30 to 38 inches, brownish-yellow (10YR 6/8) sandy clay loam mottled with strong brown (7.5YR 5/8); weak medium subangular blocky structure; hard when dry, sticky and slightly plastic when wet; clear smooth boundary; 6 to 10 inches thick.

B_2 38 to 50 inches, light-gray (10YR 7/2) sandy clay mottled with brownish yellow (10YR 6/8) and yellowish red (5YR 5/8); moderate medium subangular blocky structure; very friable; clear smooth boundary; 10 to 16 inches thick.

C_1 50 inches +, red, yellow, and gray sandy clay loam; massive; contains fragments of disintegrated granite; 5 to 75 feet to bedrock.

The depth of the solum ranges from 36 to 60 inches. The A horizon varies in thickness from 18 to 36 inches. The B horizon varies in consistence from moderately plastic to plastic. Small areas of the associated soils are included.

Use and management.—All of this soil has been cleared, and most of it is being used for crops or pasture. A part is in forest, a part is idle, and a part is used for nonfarm purposes.

Although this soil is droughty, it is fairly productive of sweetpotatoes, watermelons, crotalaria, corn, oats, velvetbeans, kudzu, bahiagrass, bermudagrass, and sericea lespedeza. It responds to good management. Rotations should be moderately long and should include deep-rooted legumes. Liberal applications of lime and complete fertilizer are needed. Terraces, contour tillage, and a water-disposal system are essential to control erosion. Capability unit 6 (IIs–1).

Herndon series

The Herndon series consists of deep, well-drained, gently to strongly sloping acid soils. They are low in natural fertility and contain little organic matter. Runoff and internal drainage are medium. The infiltration rate is slow, and the permeability is moderately slow. The capacity for available moisture is low.

Herndon soils are widely distributed in the southern part of the county. They are adjacent to Georgeville, Efland, Alamance, and Goldston soils. They are lighter colored than the Georgeville soils and darker colored than the Alamance. They are lighter brown than the Efland soils and have a less plastic subsoil.

The parent material was derived from Carolina slates. The native vegetation consists of oak, hickory, gum, dogwood, and pine trees and an undergrowth of briers and vines.

Herndon silt loam, gently sloping phase (HcB).—The following profile was observed 1 mile northwest of Mount Moriah Church.

A_p 0 to 6 inches, strong-brown (7.5YR 5/6) silt loam; weak fine granular structure; friable; contains many fine roots and many small quartz pebbles; clear smooth boundary; 4 to 12 inches thick.

B_1 6 to 10 inches, yellowish-red (5YR 5/8) silty clay loam; moderate medium subangular blocky structure; friable; contains a few fine to medium roots and a few medium quartz pebbles; clear smooth boundary; 2 to 6 inches thick.

B_2 10 to 28 inches, yellowish-red (5YR 4/8) silty clay; moderate medium subangular blocky structure; friable; contains a few fine roots; clear smooth boundary; 8 to 12 inches thick.

B_3 28 to 36 inches, yellowish-red (5YR 4/6) clay mottled with brownish yellow (10YR 6/8) and reddish-yellow (5YR 6/8); moderate medium subangular blocky structure; friable; contains a few dark-colored concretions; clear smooth boundary; 6 to 10 inches thick.

C 36 inches +, brownish-yellow (10YR 6/6) silty clay loam mottled with yellowish red (5YR 4/8); massive; contains a few fine dark-colored concretions and fragments of Carolina slate rock; 3 to 50 feet to bedrock.

Small areas of fine sandy loam, coarse silt loam, and silty clay loam are included. The color varies in both the surface soil and the subsoil. Where this soil occurs with the Georgeville soils, both layers are browner. Where it occurs with the Alamance soils, the subsoil has some yellow to grayish-yellow mottles. The thickness of the surface soil ranges from 3 to 12 inches. The thickness of the subsoil ranges from 24 to 50 inches.

Use and management.—Most of this soil has been cleared. Some of it is in crops, some is in pasture, a small part is idle, and a small part is used for nonfarm purposes. Some has reverted to trees, chiefly pines.

This soil is suited to cotton, corn, soybeans, small grains, fescue, whiteclover, dallisgrass, bermudagrass, sericea lespedeza, and annual lespedeza. It is fairly well suited to crimson clover.

This soil responds to good management, but it is likely to erode if cultivated. It needs lime and fertilizer. Rotations should be moderately long. Crop residues and green-manure crops should be utilized. Capability unit 3 (IIe–2).

Herndon silt loam, eroded gently sloping phase (HcB2).—This is an important agricultural soil in the southern part of the county. It has a brown to yellowish-brown surface soil that is 2 to 5 inches thick and varies in texture from fine sandy loam to clay loam. Small areas of gravelly silt loam are included, but there is not enough gravel to interfere with tillage. In some areas the plow layer is a mixture of subsoil and surface soil. The subsoil is 24 to 48 inches thick.

Use and management.—Some of this soil has reverted to forest that consists chiefly of pine trees. Some is cropped, and some is in pasture. A small acreage is idle or in nonfarm use.

Under good management this soil produces average yields of cotton, corn, soybeans, small grains, and annual lespedeza. It responds to lime and fertilizer. Crops should be rotated in strips. Keeping two-thirds of the soil in close-growing crops helps to conserve soil and water.

Pasture grasses and legumes grow well if limed, fertilized, and otherwise well managed. Capability unit 9 (IIIe–2).

Herndon silt loam, sloping phase (HcC).—This soil is widely distributed in the slate belt. The slope range is 6 to 10 percent. The slopes are shorter than those of Herndon silt loam, gently sloping phase. The texture of the surface soil varies from fine sandy loam to silt loam or, in small eroded areas, to silty clay loam. Small areas of gravelly silt loam are included. There is not enough gravel to interfere with tillage. The subsoil is about 30 inches thick. Its color varies from yellow to brownish red. The depth to bedrock ranges from 3 to 30 feet. Runoff is more rapid than on the gently sloping phase, and the hazard of erosion is more serious.

Use and management.—Some of this soil is in forest, and some is in crops and pasture. A small acreage is idle or in nonfarm use.

Average yields of cotton, corn, soybeans, small grains, and annual lespedeza are obtained if the crops are properly managed. Crimson clover does fairly well. If lime and fertilizer are used, average yields of grasses and legumes can be expected. Rotation should be 3 to 6 years long. Stripcropping will help to conserve soil and water. Bicolor lespedeza grows well on this soil. Capability unit 9 (IIIe–2).

Herndon silt loam, eroded sloping phase (HcC2).—This inextensive soil is widely distributed in the slate belt. The slope range is 6 to 10 percent. The slopes are shorter than those of Herndon silt loam, gently sloping phase. The texture of the surface soil varies from fine sandy loam to silty clay loam. Small areas have lost all the surface soil through erosion. The 2- to 5-inch plow layer is a mixture of former surface soil and subsoil.

Runoff is faster than on the gently sloping phase, partly because of the stronger slopes and partly because the surface layer is finer textured.

Use and management.—Much of this soil has reverted to forest. A small acreage is in crops and pasture, and a very small acreage is idle. Because of runoff and the hazard of erosion, at least three-quarters of this soil is left in forest or is used for close-growing crops.

If enough lime and fertilizer are used, a productive pasture sod can be maintained. Bicolor lespedeza grown as food for wildlife is fairly productive. Capability unit 14 (IVe–1).

Herndon silt loam, strongly sloping phase (HcD).—This soil occurs in small areas along streams in the slate belt. It occupies breaks below areas of more gently sloping Herndon and associated soils. The slopes are shorter than those of Herndon silt loam, gently sloping phase. The slope range generally is 15 to 25 percent, but a small acreage has slopes of more than 25 percent. Also included are small areas in which there are large stones that may interfere with tillage. These stony areas have never been cleared. This soil is more susceptible to erosion than the gently sloping phase. The depth to bedrock is 3 to 6 feet.

Use and management.—Much of this soil is in mixed forest of hardwoods and pines. A small acreage is in pasture, and a small acreage next to Lake Murray is idle. This idle area is under water when the lake is high.

The soil is not well suited to cultivated crops, because of the strong slopes and the erosion hazard. It produces average yields of grasses and legumes for pasture if it is limed and fertilized and if grazing is controlled. It is fairly productive of bicolor lespedeza, which provides food for wildlife. Capability unit 14 (IVe–1).

Herndon silt loam, eroded strongly sloping phase (HcD2).—This soil occurs along large streams in the slate belt. It lies between the streams and the more gently sloping Herndon and associated soils.

In general, the slope range is 15 to 25 percent, but in a few areas the gradient is more than 25 percent. The texture of the surface soil varies from gravelly fine sandy loam to silty clay loam. In eroded areas the texture is finer and the color is yellow. In some places all of the surface soil has been lost through erosion; in others the surface soil is as much as 6 inches thick. The subsoil is 12 to 30 inches thick. Runoff is faster than on Herndon silt loam, gently sloping phase. Some spots of Goldston soils are included.

Use and management.—Most of this soil is in forest. A small acreage is idle. Because of the strong slopes and the hazard of erosion, this soil is not suited to cultivated crops. If it is used for pasture, it needs to be limed and heavily fertilized. Capability unit 19 (VIe–2).

Hiwassee series

The Hiwassee series consists of deep, well-drained, acid soils. They are fairly high in fertility. They contain only a little organic matter. Infiltration, permeability, and capacity for available moisture are all moderate.

The texture of the surface soil varies from sandy loam to clay loam. In eroded areas, the surface soil is clay loam. There are a few stones on the sloping areas, but not enough to interfere with cultivation. The subsoil is permeable. Some Hiwassee soils have a stony or gravelly

B_2 horizon. These soils are intricately mixed with the nonstony soils. The solum ranges in thickness from about 36 inches to 72 inches. The depth to bedrock ranges from 30 to 80 feet.

Hiwassee soils occupy old, high stream terraces along the Saluda, Broad, Enoree, and Tyger Rivers. They occur with the Cecil, Georgeville, Mecklenburg, Wickham, and Wilkes soils. They differ from the Cecil, Georgeville, and Mecklenburg soils chiefly in parent material and in the way they were formed. They differ from the Wilkes soils in having a well-developed profile.

The parent material was old alluvium washed chiefly from weathered, dark-colored rock. The native vegetation is a forest of oak, hickory, dogwood, sourwood, cedar, holly, and pine trees and an undergrowth of brambles, shrubs, briers, and grasses.

Hiwassee sandy loam, gently sloping phase (HdB).—The following profile was observed in a cultivated field 11 miles south of Newberry.

- A_p 0 to 6 inches, dark reddish-brown (5YR 3/3) sandy loam; weak medium crumb structure; very friable; sticky when wet; contains many fine roots and a few medium to small water-rounded quartz pebbles; clear smooth boundary; 4 to 8 inches thick.
- A_3 6 to 11 inches, dark reddish-brown (2.5YR 2/4) sandy loam; weak medium to coarse granular structure; very friable; sticky when wet; contains many fine and medium roots and a few small water-rounded quartz pebbles; clear smooth boundary; 3 to 8 inches thick.
- B_1 11 to 25 inches, dusky-red (10R 3/4) clay loam; moderate medium subangular blocky structure; friable; sticky when wet; contains a few small roots; clear smooth boundary; 10 to 18 inches thick.
- B_2 25 to 31 inches, dark-red (10R 3/6) silty clay; moderate fine subangular blocky structure; friable; sticky when wet; contains a few small pebbles; clear smooth boundary; 2 to 10 inches thick.
- B_3 31 to 64 inches, dark-red (10R 3/6) clay; moderate fine angular blocky structure; friable; sticky when wet, hard when dry; clear smooth boundary; 8 to 38 inches thick.
- C 64 inches +, dark-red (10R 3/6) sandy clay loam grading toward coarser textured material; faint mottles of reddish yellow (5YR 7/8); friable; contains many small quartz pebbles and pieces of weathered dark-colored material; variable depth.

Included are small areas that vary in texture from sandy loam to clay loam. The color of the surface soil varies from dark brown to red; the color of the subsoil varies from dark red to red. The subsoil ranges in thickness from 30 to 72 inches.

Use and management.—Most of this soil has been cleared and used for crops and pasture. Now, some is in pasture and some is in forest. A small acreage is idle or in nonfarm use.

This soil is suitable for corn, small grains, soybeans, cotton, tall fescue, white clover, crimson clover, bermudagrass, dallisgrass, bahiagrass, sericea lespedeza, and annual lespedeza. If limed and fertilized, this soil is particularly well suited to hay and pasture. Alfalfa grows fairly well, but the air drainage is such that, in some years, early spring frost thins the stand.

Rotations should be of moderate length and should include deep-rooted legumes. Crop residues and green-manure crops should be turned under to replenish the supply of organic matter. Stripcropping will help to control runoff and to conserve the soil. Capability unit 2 (IIe–1).

Hiwassee sandy loam, eroded gently sloping phase (HdB2).—This is an inextensive soil that occurs on stream terraces. The 4- to 6-inch plow layer is a mixture of surface soil and subsoil. In eroded areas, the color is dusky red or red and the texture is sandy loam to clay loam. The rate of infiltration is slower and runoff is greater than in the uneroded phase, because the surface layer is finer textured.

Use and management.—Most of this soil is in a predominantly pine forest. Some is in pasture or crops.

If this soil is well managed, it can be used for cultivated crops. If properly limed and fertilized, it is fair for hay and pasture. It is suitable for corn, cotton, soybeans, small grains, tall fescue, white clover, crimson clover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. Bicolor lespedeza grown to provide food for wildlife needs to be fertilized.

This soil should be limed and fertilized, terraced, and farmed on the contour. A water-disposal system should be installed. Crop residues and green-manure crops should be turned under. Capability unit 8 (IIIe–1).

Hiwassee sandy loam, sloping phase (HdC).—The slope range of this soil is 5 to 10 percent. The slopes are generally shorter than those of Hiwassee sandy loam, gently sloping phase. Erosion is a more serious hazard than on the gently sloping phase. The solum is 12 to 24 inches shallower than that of the gently sloping phase. A few places are stony, but the stones do not interfere with tillage.

Use and management.—Some of this soil is in forest. A small acreage is in pasture or crops or is idle.

This soil is suited to the same crops as Hiwassee sandy loam, eroded gently sloping phase, and it needs about the same kind of management. Rotations should be of medium length. Capability unit 8 (IIIe–1).

Hiwassee sandy loam, eroded sloping phase (HdC2).—This inextensive soil is on high terraces near the larger streams in the county. The slope range is 5 to 10 percent. The velocity and volume of runoff cause loss of soil and water. The 4- to 6-inch plow layer is a mixture of surface soil and subsoil materials. The color of the surface layer varies from reddish brown to red. The thickness of the solum ranges from 24 to 48 inches.

Use and management.—A large part of this soil is in forest. A small acreage is in crops and pasture. If this soil is used for crops, rotations should be 4 to 8 years long. Deep-rooted grasses and legumes should be grown for three-fourths of the time. This soil is responsive to liming and fertilizing, which are important in maintaining sod and in producing normal yields of grasses and legumes for hay and pasture. Capability unit 14 (IVe–1).

Hiwassee sandy loam, eroded strongly sloping phase (HdD2).—This inextensive soil occurs along the Saluda and Broad Rivers. It occupies breaks between more gently sloping Hiwassee soils and the first bottoms. The slope range is 10 to 15 percent. In some small areas the gradient is more than 15 percent. The slopes are shorter than those of Hiwassee sandy loam, gently sloping phase. Small areas of clay loam are included, also small areas of Wilkes soils and of shallow, gullied land. In some small areas there are medium-sized stones, but not enough to interfere with tillage. The thickness of the solum varies

from 18 to 36 inches. The short, steep slopes make the hazard of erosion severe.

Use and management.—Most of this soil is in a forest of hardwoods and pines. There is a very small acreage in pasture.

The severe erosion hazard makes this soil unsuitable for crops. Lime and fertilizer are needed to maintain a fairly productive pasture sod. Bicolor lespedeza grown to provide food for wildlife needs to be fertilized. Capability unit 19 (VIe–2).

Iredell series

The Iredell series consists of moderately deep, moderately well drained, nearly level to gently sloping soils. These soils are acid and are low in organic matter. Their natural fertility is low. Runoff is fairly slow, and erosion is not a hazard. Internal drainage is very slow because the subsoil is dense and very slowly permeable. The rate of infiltration is moderate. The capacity for available moisture is high.

The surface soil varies in texture from sandy loam to loam. It is 6 to 14 inches thick. The subsoil is dense, impervious, plastic clay. The depth to bedrock ranges from 20 to 34 inches. It is least near the stronger slopes. Some small areas have small boulders that interfere with cultivation.

Iredell soils occur in the west-central part of the county with the Lloyd, Mecklenburg, and Enon soils. They have a yellower, less permeable subsoil and a shallower solum than the associated soils. Where these soils adjoin the Mecklenburg soils, there are dark-colored concretions throughout the profile. Where they adjoin the Enon soils, the surface soil is sandier textured than that of the typical Iredell soil. Most areas adjacent to the Lloyd soils have a browner surface layer than is typical.

The parent material was residuum weathered from dark-colored basic rocks—diorite gabbro, and hornblende schist. The native vegetation consists of oak, hickory, dogwood, redcedar, and holly trees.

Iredell sandy loam, gently sloping phase (IaB).—The following profile was observed in a pasture about 1 mile southeast of Kinards on U.S. Highway No. 76.

- A_p 0 to 5 inches, dark-brown (7.5YR 4/2) sandy loam; weak fine granular structure; friable; contains many fine roots and a few small, dark-colored concretions; clear smooth boundary; 4 to 7 inches thick.
- A_3 5 to 12 inches, olive (5Y 5/4) sandy loam mottled with dark brown (10YR 4/3); weak medium to coarse granular structure; friable; contains many fine roots, a few small pores, and a few small quartz pebbles; clear smooth boundary; 5 to 9 inches thick.
- B_1 12 to 19 inches, yellowish-brown (10YR 5/6) clay mottled with olive yellow (2.5Y 6/8); moderate medium angular blocky structure; firm when moist, hard when dry, and very plastic and sticky when wet; contains a few fine roots and a few small manganese concretions; clear smooth boundary; 5 to 10 inches thick.
- B_2 19 to 27 inches, strong-brown (7.5YR 5/8) clay mottled with dark yellowish brown (10YR 4/4) and olive yellow (2.5Y 6/6); strong coarse angular blocky structure; firm to very firm when moist, hard when dry, very plastic when wet; contains spots or pockets of manganese concretions; clear smooth boundary; 6 to 10 inches thick.
- C 27 inches +, yellowish-brown (10YR 5/4) clay to clay loam mottled with pale olive (5Y 6/3) and very pale brown (10YR 7/3); massive; contains disintegrated dark-colored rock and many small manganese concretions; thickness varies.

The depth to bedrock varies. In some small areas, the surface soil is loam. In others it is local alluvium washed from higher lying adjacent areas of Iredell and Mecklenburg soils.

Use and management.—Most of this soil is being used for pasture and crops. A small part is in forest, a little is idle, and a little is used for nonfarm purposes.

This soil is suited to cotton, corn, small grains, tall fescue, whiteclover, bermudagrass, dallisgrass, and annual lespedeza. It is good for pasture. It is responsive to good management. It needs lime and fertilizer, especially potash. Rotations should be 2 to 4 years long and should include a legume. This soil is not erodible. Many areas need open ditches to remove surface water. The more strongly sloping areas need terraces, grassed waterways, and contour tillage. Capability unit 5 (IIe–4).

Lloyd series

The Lloyd series consists of deep, well-drained, gently sloping to moderately steep, acid soils. These soils are moderately low in natural fertility, and they contain little organic matter. The rate of infiltration, the permeability, and the capacity for available moisture are moderate.

The surface soil varies in texture from sandy loam to clay. The subsoil varies in color from red to dark red and in thickness from 30 to 80 inches. In some places there are yellowish-red to yellow mottles, streaks, or splotches, especially in areas near the Enon and Mecklenburg soils.

The Lloyd soils are widely distributed throughout the county, except in the slate belt. They occur with the Davidson, Cecil, Mecklenburg, and Enon soils. They differ from the Davidson soils in having a sandy surface soil and in being lighter colored throughout the profile. They differ from the Cecil soils in having a browner surface soil and a redder subsoil. They differ from the Mecklenburg and Enon soils in color and in being better drained.

The parent material was residuum weathered from hornblende, gneiss, and schist. The native vegetation consists of oak, hickory, dogwood, sourwood, elm, redcedar, holly, and pine trees and an undergrowth of briers and grasses.

Lloyd sandy loam, gently sloping phase (LbB).—The following profile was observed 1 mile southeast of Kinards.

- A_p 0 to 8 inches, dark-brown (7.5YR 4/4) sandy loam; weak fine granular structure; very friable; contains many fine roots; clear smooth boundary; 4 to 10 inches thick.
- B_1 8 to 26 inches, red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; contains many fine roots; sticky when wet; clear smooth boundary; 12 to 22 inches thick.
- B_2 26 to 72 inches, dark-red (2.5YR 3/6) clay; moderate fine subanguler blocky structure; firm, sticky when wet, hard when dry; contains fine fragments of weathered parent material; clear wavy boundary; 24 to 48 inches thick.
- C_1 72 inches +, dark-red (2.5YR 3/6) sandy clay mottled with reddish yellow (5.7R 7/6); massive; contains fragments of weathered dark-colored basic rock; several feet to bedrock.

Use and management.—Most of this soil has been cropped, much of the time to cotton. A part of it is now being used for crops, a part is in pasture, and a small part

is idle or in nonfarm use. A part has reverted to or has been planted to trees, mostly pines.

This soil is suited to cotton, corn, soybeans, small grains, tall fescue, white clover, crimson clover, bermudagrass, bahiagrass, dallisgrass, sericea lespedeza, and annual lespedeza. It responds to good management. Fertilizer and lime are needed. Capability unit 2 (IIe–1).

Lloyd sandy loam, eroded gently sloping phase (LbB2).—This is an important agricultural soil. The slope range is 2 to 4 percent. The texture of the surface soil varies from sandy loam to clay loam. The 4- to 6-inch plow layer consists of a mixture of former surface soil and the subsoil. Small areas have lost all of their surface soil through erosion. The color of the subsoil varies from red to dark red, and the thickness ranges from 30 to 70 inches. Shallow gullies are common in some areas. Sheet erosion, however, is more common than gully erosion. Because of the finer texture of the eroded surface soil, this soil has a slower rate of infiltration and more rapid runoff than the uneroded gently sloping phase of Lloyd sandy loam.

Use and management.—All of this soil has been cultivated. For years at a time it was used continuously for cotton. Some has now reverted to forest, and some has been planted to trees, largely pines. Some of the acreage is in crops, some is in pasture, some is idle, and a small part is in nonfarm use.

If properly managed, this soil is productive. Permanent stands of grasses and legumes can be maintained and will provide better than average yields of forage. Bicolor lespedeza provides average yields of food for wildlife.

This soil responds to lime and fertilizer. Crop residues and green-manure crops should be turned under to increase the supply of organic matter in the soil. Crops should be grown in a 3- to 6-year rotation, and close-growing crops should be on the soil two-thirds of the time. Terraces, contour stripcropping, and sodded water-disposal areas will help to conserve the soil. Capability unit 8 (IIIe–1).

Lloyd sandy loam, sloping phase (LbC).—This soil occupies breaks next to areas of Lloyd sandy loam, gently sloping phase, and associated soils. The slope range is 6 to 10 percent. The slopes are shorter than those of the gently sloping phase. The texture of the surface soil is predominantly sandy loam. In small eroded places it is sandy clay loam. The color varies from dark brown to brown, and the thickness ranges from 4 to 10 inches. The subsoil varies in color from red to dark red and in thickness from 36 to 60 inches. Because of the stronger slopes, runoff is faster and greater than on the gently sloping phase, and erosion is a more serious hazard.

Use and management.—Some of this soil is in crops, some is in pasture, and some is in forest. A small acreage is idle.

This soil is suited to the crops commonly grown in the county. Crops should be grown in a fairly long rotation. To conserve soil and water, close-growing crops should be on the soil two-thirds of the time. Because of the strong slopes, a water-disposal system is needed to control runoff. Average yields of grasses and legumes can be obtained if lime and fertilizer are used. Bicolor lespedeza can be grown to provide food for wildlife. Capability unit 8 (IIIe–1).

Lloyd sandy loam, eroded sloping phase (LbC2).—This soil occurs on breaks next to the gently sloping Lloyd soils and associated soils. The slope range is 6 to 10 percent. The slopes are shorter than those of the gently sloping phases. The texture of the surface soil varies from sandy loam to clay loam, and the thickness ranges from 3 to 7 inches. In some small areas all of the surface soil has been removed by erosion. The color varies from brown to red, depending upon the degree of erosion. The subsoil is 30 to 60 inches thick.

Infiltration is slower and runoff is greater and faster than on the gently sloping phases of Lloyd sandy loam; consequently, the erosion hazard is greater.

Use and management.—This soil has been cropped, but most of it has reverted to forest. A small acreage is still in crops or pasture, and a little is idle.

This soil needs organic matter, lime, and fertilizer. It is fairly productive of deep-rooted legumes for hay and pasture. Because of the serious erosion hazard, two-thirds of the acreage should be in close-growing crops. Good tilth is hard to maintain. Bicolor lespedeza grown to provide food for wildlife needs to be fertilized. Capability unit 8 (IIIe–1).

Lloyd sandy loam, strongly sloping phase (LbD).—This soil occupies breaks next to areas of more gently sloping Lloyd soils and associated soils. The slope range is 10 to 15 percent. The slopes are much shorter than those of Lloyd sandy loam, gently sloping phase. The surface soil is 4 to 10 inches thick, and the subsoil is 24 to 48 inches thick. The color varies from red to dark red. The depth to bedrock is 10 to 30 feet. Runoff is faster than on the gently sloping phase, and erosion is a severe hazard.

Use and management.—Most of this soil is in forest. A small acreage is in crops and pasture or is idle.

Because of the strong slopes and the hazard of erosion, this soil is poorly suited to cultivation. If it is used for pasture, deep-rooted grasses and legumes should be grown. Moderate yields can be obtained if the pastures are liberally fertilized. Bicolor lespedeza can be grown in forest openings to provide food for wildlife. Capability unit 14 (IVe–1).

Lloyd sandy loam, eroded strongly sloping phase (LbD2).—This soil occurs on steep breaks next to areas of more gently sloping Lloyd soils and associated soils. The slope range is 6 to 10 percent. The slopes are shorter than those of Lloyd sandy loam, gently sloping phase. The texture of the surface layer varies from sandy clay loam to clay, and the thickness ranges from 1 to 3 inches. The 2- to 4-inch plow layer is a mixture of former surface soil and subsoil. Included are small and medium-sized areas from which all of the original surface soil has been removed by erosion. The depth to bedrock ranges from 5 to 20 feet. Erosion is a serious hazard.

Use and management.—Most of this soil is in forest. A little is in crops, a little is in pasture, and a little is idle.

This soil is unsuitable for row crops. If limed and fertilized, it will produce moderate yields of deep-rooted grasses and legumes. Fair yields of bicolor lespedeza can be produced. Capability unit 19 (VIe–2).

Lloyd sandy loam, moderately steep phase (LbE).—This minor soil is distributed along the larger streams outside the slate belt. It occurs on steep breaks next to other Lloyd soils and associated soils. It is closely associated with the shallow Wilkes soils and differs from them in having a well-developed profile.

The slope range is generally 15 to 25 percent, but a small acreage has slopes of more than 25 percent. The slopes are shorter than those of Lloyd sandy loam, gently sloping phase. Runoff is faster and greater than on the gently sloping phase. The solum is 24 to 42 inches thick.

Use and management.—Most of this soil is in forest. A little is in crops, a little is in pasture, and a little is idle.

Because of the moderately steep slopes and the severe hazard of erosion, this soil is not suitable for row crops. It can be used for pasture. If limed and fertilized, it will produce average yields of crimson clover, bahiagrass, bermudagrass, sericea lespedeza, and annual lespedeza. Bicolor lespedeza can be grown to supply food for wildlife. Capability unit 19 (VIe–2).

Lloyd clay loam, severely eroded gently sloping phase (LaB3).—This soil occurs in small areas, generally on ridgetops. In some areas the 3- to 5-inch plow layer is a mixture of former surface soil and subsoil; in other places it is all subsoil. In a few spots 1 or 2 inches of the original surface soil remains. Shallow gullies are common.

The color of the surface soil is brownish red to red, and the texture ranges from sandy clay loam to clay. The subsoil is 24 to 40 inches thick. Runoff is greater than on Lloyd sandy loam, gently sloping phase, and infiltration is slower.

Use and management.—All of this soil has been cultivated, most of the time continuously to cotton. Most of it has now reverted to or been planted to trees, chiefly pines. A small acreage is idle, and a very small acreage is in nonfarm use.

This soil should be used for crops only in long rotations that include grasses and legumes. If used for hay or pasture, it needs lime and fertilizer. It produces only fair yields of crimson clover, bermudagrass, sericea lespedeza, and annual lespedeza. Bicolor lespedeza is grown in small openings in the forest to provide food for wildlife. If it is fertilized, yields are fair. Capability unit 14 (IVe–1).

Lloyd clay loam, severely eroded sloping phase (LaC3).—This soil occupies breaks next to other Lloyd soils and associated soils. The slope range is 6 to 10 percent. The slopes are shorter than those of the gently sloping phases. The texture of the surface soil varies from sandy clay loam to clay, the color varies from brown to red, and the thickness ranges from 1 to 3 inches. The 3- to 5-inch plow layer is mostly subsoil material. The thickness of the subsoil ranges from 28 to 50 inches. Runoff is greater and faster than on Lloyd clay loam, severely eroded gently sloping phase, and erosion is a very serious problem.

Use and management.—Most of this soil has been cropped but is now in forest. A little is still in crops, a little is in pasture, and a little is idle.

Not more than a quarter of this soil should be in row crops at one time. The rest should be in close-growing crops. Tillage should be on the contour, and rotations should be 4 to 12 years long. Because of the strong slopes, terracing is not practicable.

This soil responds to frequent liming and fertilizing. It is fairly productive of deep-rooted pasture grasses and legumes if limed and fertilized frequently. Bicolor lespedeza should be fertilized. Capability unit 14 (IVe–1).

Lloyd clay loam, severely eroded strongly sloping phase (LaD3).—This inextensive soil is widely distributed along the breaks that lead to the medium-sized and large streams outside the slate belt. The slope range is 6 to 10 percent. The texture of the surface layer varies from sandy clay loam to clay. In most places, the 2- to 4-inch plow layer is composed of subsoil material. The subsoil is 20 to 48 inches thick. Runoff is faster and greater than on Lloyd clay loam, severely eroded gently sloping phase. The rate of infiltration is slow. Erosion is a very serious hazard, and shallow gullies are common.

Use and management.—Most of this soil is in forest. A small acreage is in pasture, and a small acreage is idle.

Because of strong slopes and erosion, this soil is not suitable for row crops. It is fairly productive of pasture if lime and fertilizer are applied. Bicolor lespedeza should be fertilized. Capability unit 22 (VIIe–1).

Local alluvial land

This land type is deep and well drained. It is composed of materials washed from the uplands and deposited on nearly level areas and gentle slopes in depressions and shallow drainageways.

Local alluvial land is medium acid to strongly acid. It contains a moderate amount of organic matter and plant nutrients. Infiltration is moderately rapid to rapid. The moisture relations are favorable for crops throughout the growing season.

The texture of the surface layer is generally sandy loam or silt loam. In some places it is loam. The color ranges from dark brown to red. The color and texture vary, depending on the drainage, the kinds of parent soils, and the degree to which the parent soils were eroded. For example, local alluvium derived from exposed areas of Cecil subsoil is redder and more clayey than that derived from the lighter colored, sandier surface layers of less eroded soils.

Some soil development is evident. There is a color pattern and, to a depth of 24 inches, weak structural development. The thickness of the local alluvium ranges from 12 to 36 inches. A difference in structure indicates that the underlying material is much older than the alluvium.

This land type is distributed throughout the county. The individual areas are up to 3 acres in size.

The parent materials were derived from upland soils that overlie granite, gneiss, schist, and Carolina slates. The finer textured materials came from soils that have formed over Carolina slates, and the sandier materials came from soils that have formed over other rocks. The native vegetation consists of oak, hickory, gum, poplar, and pine trees and an undergrowth of briers, vines, and grasses.

Local alluvial land, well drained (Lc).—The following profile was observed in a cultivated field 3 miles east of Newberry.

A_p 0 to 7 inches, olive-gray (5Y 4/2) sandy loam; moderate medium crumb structure; very friable; contains numerous fine roots; clear smooth boundary; 4 to 8 inches thick.

A_2 7 to 12 inches, olive-brown (2.5Y 4/4) sandy loam; moderate coarse granular structure; friable; contains numerous fine roots and decaying organic matter; clear smooth boundary; 4 to 7 inches thick.

Figure 5.—**Local alluvial land, well drained, used as a permanent grassed waterway. In this area the surface soil is sandy loam.**

A_3 12 to 16 inches, light olive-brown (2.5Y 5/4) sandy loam; moderate coarse granular structure; friable; contains numerous fine roots and fine pores; abrupt smooth boundary; 3 to 7 inches thick.

C_1 16 to 23 inches, pale-yellow (2.5Y 7/4) sand; weak fine granular structure; very friable; contains a few coarse sand grains; clear smooth boundary; 5 to 9 inches thick.

C_2 23 to 31 inches, olive (5Y 5/3) sandy clay loam mottled with brownish yellow (10YR 6/6); moderate medium subangular blocky structure; very friable; contains a few coarse sand grains and small quartz pebbles; clear smooth boundary; 6 to 10 inches thick.

C_3 31 to 38 inches, light yellowish-brown (10YR 6/4) sandy clay mottled with reddish yellow (7.5YR 6/8); moderate medium subangular blocky structure; friable; contains many fine to medium-sized quartz pebbles; clear smooth boundary; 5 to 11 inches thick.

D 38 inches +, disintegrated massive granite that breaks easily to single-grained, yellowish-brown, reddish-yellow, and red coarse sand.

The following profile was observed 9 miles southeast of Prosperity.

A_p 0 to 8 inches, dark-brown (10YR 4/3) silt loam; moderate medium granular structure; very friable; contains numerous fine roots; clear smooth boundary; 4 to 10 inches thick.

A_2 8 to 14 inches, very dark grayish-brown (10YR 3/2) silt loam; strong coarse granular structure; friable; contains numerous fine roots; abrupt smooth boundary; 4 to 9 inches thick.

C_1 14 to 24 inches, brownish-yellow (10YR 6/6) silty clay loam mottled with light yellowish brown (2.5Y 6/4) and red (10R 4/6); moderate medium granular structure; friable; contains a few fine and medium roots; clear smooth boundary; 8 to 16 inches thick.

C_2 24 to 37 inches, strong-brown (7.5YR 5/6) clay mottled with light yellowish brown (2.5Y 6/4); moderate medium subangular blocky structure; firm; contains a few small quartz pebbles; clear smooth boundary; 12 to 34 inches thick.

D 37 inches +, weathered Carolina slate rock that breaks easily to reddish-yellow (7.5YR 6/8), olive yellow (2.5Y 6/6), and light olive-gray (5Y 6/2) fine to coarse fragments.

Use and management.—Practically all of this soil is used for crops and pasture (fig. 5). Areas near houses are used for gardens. Its favorable tilth and moisture relations make this soil suitable for intensive use, and, under good management, it is very productive of pasture and many different crops. Capability unit 1 (I–1).

Lockhart series

The Lockhart series consists of deep, red, well-drained, gently sloping to sloping, medium acid soils. These soils are low in fertility and contain little organic matter. They are permeable to water, air, and roots. The rate of infiltration is moderately slow. Both sheet and gully erosion are active.

The texture is sandy loam, sandy clay loam, or clay loam. Throughout the profile there are ¼- to ¾-inch crystals of feldspar, which become more numerous with depth.

Lockhart soils occur 8 to 10 miles northeast of Newberry, with the Cecil, Appling, and Wilkes soils. They differ from the Cecil and Appling soils in containing feldspar crystals. They resemble the Cecil soils in color, but differ from them in parent material. They differ from the Appling soils in color and parent material. They differ from the Wilkes soils in color, in thickness of layers, in development of profile, and in depth to bedrock.

The parent material was weathered from pegmatite and porphyritic granite. The native vegetation consists of pine, oak, and gum trees.

Lockhart clay loam, severely eroded gently sloping phase (LdB3).—The following profile was observed in a pine forest 1 mile north of Browns Crossroads.

A_2 0 to 6 inches, reddish-brown (5YR 5/4) clay loam; weak fine subangular blocky structure; very friable; contains many fine roots and many small feldspar crystals; clear smooth boundary; 4 to 10 inches thick.

B_1 6 to 20 inches, red (2.5YR 4/6) clay; moderate medium subangular blocky structure; friable; contains a few fine roots, many small to medium-sized angular feldspar crystals, and a few fine mica flakes; clear smooth boundary; 10 to 18 inches thick.

B_2 20 to 40 inches, red (2.5YR 4/8) clay; moderate medium to coarse subangular blocky structure; friable; contains many fine feldspar crystals, a few fine mica flakes, and a few small quartz pebbles; clear smooth boundary; 14 to 24 inches thick.

C 40 inches +, brownish-yellow (10YR 6/8) sandy clay mottled with red (2.5 YR 4/8); massive; contains many feldspar crystals and a few fine mica flakes.

Included are small areas of Lockhart sandy loam and Lockhart clay.

Use and management.—All of this soil has been cleared and cropped, much of the time to cotton. Most of it is now in forest in which pine trees are predominant. A small part is used for crops and pasture.

This soil is fairly well suited to cotton, corn, soybeans, and small grains. It is also suited to white clover, crimson clover, bermudagrass, sericea lespedeza, and annual lespedeza for hay and pasture.

This soil responds to good management. It needs moderate applications of lime and liberal applications of fertilizer. Where feasible, it should be stripcropped. Rotations should be of moderate length and should include deep-rooted legumes. Pastures should be fertilized and be grazed in rotation. Capability unit 8 (IIIe–1).

Lockhart clay loam, severely eroded sloping phase (LdC3).—This soil is not extensive. Its slope range is 6 to 10 percent. The slopes are shorter than those of the Lockhart clay loam, severely eroded gently sloping phase. Runoff is more rapid than on the gently sloping phase, and erosion is more severe. There are many small gullies.

Use and management.—Most of this soil has been cultivated. Now, most of it is in trees, chiefly pines. A very small acreage is in crops and pasture.

If very intensive conservation measures are practiced, this soil can be used for the same crops as the gently sloping phase. Kudzu and sericea lespedeza or other close-growing crops should be grown, and rotation should be long. Terracing is not practicable. Fields should be contour cultivated and stripcropped, and all natural draws should be sodded. Lime and fertilizer are essential to the production of fairly good yields of all crops. Capability unit 14 (IVe–1).

Mecklenburg series

The soils of the Mecklenburg series are deep and moderately well drained to well drained. They are important agricultural soils. The texture of the surface soil varies from loam to sandy loam. In small eroded areas, it is clay loam. This layer is 4 to 14 inches thick.

Mecklenburg soils are widely distributed throughout the central part of the county. They occur with Davidson, Lloyd, Cecil, Enon, and Iredell soils. They are browner and have slower internal drainage than the Davidson, Lloyd, and Cecil soils. They are browner and deeper and have better internal drainage than the Iredell soil.

The parent material was weathered from basic rocks—hornblende schist, gabbro, and diorite. The forest cover consists of oak, hickory, dogwood, pine, and cedar trees and an undergrowth of vines, briers, and grasses.

Mecklenburg sandy loam, gently sloping phase (MaB).—This soil is slightly acid to medium acid and is moderately fertile. It has a moderate supply of organic matter. Plant roots readily penetrate it. Permeability is moderately slow to slow. The relief is gently sloping to strongly sloping. The following profile was observed in a pasture 2 miles southeast of Kinards.

- A_p 0 to 5 inches, reddish-brown (5YR 4/3) sandy loam; weak fine granular structure; very friable; contains many fine roots and many small, dark-colored manganese concretions; slightly acid; clear smooth boundary; 4 to 14 inches thick.
- B_1 5 to 12 inches, reddish-brown (5YR 4/4) clay loam; moderate medium subangular blocky structure; friable; sticky when wet; contains many fine roots and many small manganese concretions; slightly acid; clear smooth boundary; 4 to 10 inches thick.
- B_2 12 to 22 inches, yellowish-red (5YR 4/8) clay; moderate medium subangular blocky structure; distinct clay skins; firm; sticky when wet, hard when dry; contains a very few fine roots and a few manganese concretions; slightly acid; clear smooth boundary; 7 to 12 inches thick.
- B_3 22 to 40 inches, yellowish-red (5YR 5/8) clay mottled with brownish yellow (10YR 6/8); moderate medium and fine subangular blocky structure; sticky when wet, hard when dry; friable; contains a few small dark-colored manganese concretions; slightly acid; gradual smooth boundary; 14 to 24 inches thick.
- C 40 inches +, red (2.5YR 5/8) silty clay loam mottled with yellowish brown (10YR 5/4); massive; contains manganese concretions, quartz pebbles, and streaks of disintegrated parent material; 10 to 60 feet to bedrock.

Small areas of Mecklenburg clay loam and of Mecklenburg loam are included in this mapping unit.

The depth to mottling in the subsoil varies from 14 to 24 inches. Where this soil is closely associated with the Iredell soil, some of the mottles are gray. The amount of dark-colored concretions varies from place to place.

Use and management.—All of this soil has been cleared. Most of it is used for crops and pasture. A part of it has reverted to forest that consists largely of pines. A small part is idle, and a small part is in nonfarm use.

This soil is suited to cotton, corn, soybeans, small grains, tall fescue, white clover, crimson clover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. Under good management, it will produce better than average yields. It needs to be protected from erosion. Rotations should be of moderate length. Lime and fertilizer are needed. Capability unit 4 (IIe–3).

Mecklenburg sandy loam, sloping phase (MaC).—This is a deep, moderately well drained soil. The slope range is 6 to 10 percent. The slopes are shorter than those of Mecklenburg sandy loam, gently sloping phase. Erosion is a more severe hazard than on the gently sloping phase. The texture of the surface soil varies from sandy loam to loam, and the thickness ranges from 3 to 12 inches.

Use and management.—All of this soil has been cleared. A large area is still being used for crops or pasture. A small part is idle, and a small part is in nonfarm use. A part has reverted to or been planted to trees, largely pine.

This soil is suited to cotton, corn, soybeans, small grains, crimson clover, and annual lespedeza. If the weather is normal and management is adequate, good yields can be expected. This soil is also suited to tall fescue, whiteclover, bermudagrass, dallisgrass, bahiagrass, and sericea lespedeza.

This soil responds to good management. It needs liberal applications of lime and fertilizer. It is more erodible than Mecklenburg sandy loam, gently sloping phase, and should be stripcropped and terraced. Contour tillage and water-disposal systems are also helpful in controlling erosion. Rotations should be moderately long and should include deep-rooted legumes. Capability unit 10 (IIIe–3).

Mecklenburg sandy loam, eroded sloping phase (MaC2).—Some medium-sized areas of this soil have lost all of their original surface soil through erosion and now have a surface layer of clay loam. In some areas the 4- to 6-inch plow layer is a mixture of former surface soil and subsoil. Runoff is faster than on Mecklenburg sandy loam, sloping phase, and infiltration is slower. The slopes are shorter, and erosion is a very serious hazard.

Use and management.—All of this soil has been used for crops or pasture. Most of it has reverted to forest that consists largely of pine trees. A small part is idle, and a small part is in pasture or crops.

This soil needs lime and fertilizer if used for hay, crops, or pasture. If very well managed, it will give fair yields of soybeans, small grains, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. It is fairly well suited to crimson clover.

Terracing this soil is not feasible, but it can be protected from erosion by tilling on the contour, stripcropping in narrow contour strips, and constructing a water-disposal system. Control of weeds and rotation of grazing will help to maintain good pastures. Capability unit 15 (IVe–2).

Mecklenburg sandy loam, eroded strongly sloping phase (MaD2).—This soil is deep and moderately well

drained. The slope range is 10 to 15 percent. The texture of the surface layer varies from sandy loam to clay. The solum is 6 to 18 inches thinner than that of Mecklenburg sandy loam, gently sloping phase. There are gullies in some places. Small areas of shallow soils are included.

Use and management.—Most of this soil is in forest. Part of it has been cleared. A very small part is in pasture or is idle.

This soil is best suited to forest. Under drastic conservation practices, it will give fair yields of bermudagrass, sericea lespedeza, and annual lespedeza. Lime and fertilizer are needed. Pastures should be grazed in rotation. Bicolor lespedeza needs to be fertilized. Capability unit 21 (VIe–4).

Mixed alluvial land

This land type consists of deep, strongly acid, poorly drained to well drained deposits of alluvium derived from all kinds of rocks that occur in the county. It occurs in elongated strips along small streams and is frequently flooded. It has no distinct horizons.

This land type is widely distributed throughout the county.

Mixed alluvial land, poorly drained (Mb).—This unit occurs along the small streams. It includes areas of gravel, coarse sand, and silt loam. Near the surface the color varies from light brown to brown. The subsurface soil is gray or mottled gray and brown. Quartz pebbles, cobblestones, and fragments of rock are fairly common.

This land type is low in fertility. Infiltration is moderately rapid, and permeability is rapid. The capacity for available moisture is low, although the water table is high.

Use and management.—Some of this land is used for pasture, but most of it is in forest. The trees are largely undesirable hardwoods. The understory consists of canes, alders, briers, and grasses.

Crops requiring tillage are not grown. Whiteclover, tall fescue, dallisgrass, and annual lespedeza are suitable. Plants that provide food for wildlife are planted annually.

This land type will produce fair pastures if it receives frequent and liberal applications of lime and fertilizer. Pastures should be grazed in rotation. To remove floodwaters, V-ditches with lateral V-ditch drains are needed Capability unit 18 (Vw–2).

Mixed alluvial land, well drained (Mc).—This land type occurs along the medium-sized and small streams on the first bottoms. The surface texture varies from loamy sand to clay loam. There are also small areas of coarse sand and silty clay loam. In some places stones, pebbles, and fragments of rock occur in the profile. The color varies from grayish brown to reddish brown. In some areas there are gray mottles at a depth of about 2 feet. The water table is at a depth of only 3 feet in some areas.

This land type contains a moderate amount of organic matter. The fertility is moderate. Infiltration and permeability are moderately rapid. The capacity for available moisture is adequate except in extremely droughty years.

Use and management.—Much of this land has been cleared. A part is in pasture. A little is cultivated, but most of the acreage is in hardwoods, shrubs, vines, briers, and grasses. A very small acreage is idle or in nonfarm use.

Corn, small grains, and annual lespedeza are the principal crops grown. If adequately limed and fertilized and otherwise well managed, tall fescue, whiteclover, bermudagrass, dallisgrass, and annual lespedeza provide moderately good grazing. It is practical to lime and fertilize annuals that provide food and cover for wildlife.

Tilth is easy to maintain, but, because of the flood hazard, this land is not ordinarily tilled. Shallow V-type ditches are needed to remove surface water. Capability unit 7 (IIw–2).

Moderately gullied land

This land type consists of moderately deep gullies and small areas of surface soil and subsoil between the gullies.

Areas of moderately gullied land are found throughout the county. Most of the areas are small, but some in the northern part of the county are fairly large. Most of the gullies are stabilized by trees and honeysuckle. The slope range is 4 to 25 percent. The texture of the surface soil varies from gravelly sandy loam to clay. The thickness of the subsoil is variable.

All of this unit is in forest. It is not suited to crops or pasture. The cost of reclaiming it would be prohibitive.

Moderately gullied land, firm materials (Md).—This unit has a firm, light-brown to red subsoil. The exposed parent material, which was derived from basic rocks, is firm to friable. It is less permeable to roots and water and is more difficult to work than Moderately gullied land, friable materials. An effective ground cover is harder to establish on this land type than on Moderately gullied land, friable materials. Capability unit 24 (VIIe–3).

Moderately gullied land, friable materials (Me).—This unit has a friable, yellow to red subsoil. The exposed parent material was derived from granite and gneiss. It is friable to very friable and is moved very readily by runoff. The gullies are stabilized by trees, honeysuckle, and kudzu. Capability unit 22 (VIIe–1).

Orange series

The Orange series consists of moderately deep, nearly level to gently sloping, somewhat poorly drained soils. These soils are medium acid to strongly acid. They are very low in natural fertility and organic matter. Infiltration is slow, and the capacity for available moisture is moderate.

The texture of the surface soil varies from fine sandy loam to silt loam, but it is predominantly silt loam. The thickness of the surface soil ranges from 6 to 14 inches. The subsoil is dense, very slowly permeable clay.

Orange soils occur in the slate belt in the southeastern part of the county with the Herndon, Alamance, and Efland soils. They differ from these soils chiefly in having a plastic, heavy clay subsoil. The individual areas of Orange soils are small.

The parent material was residuum weathered from basic rocks similar to Carolina slates. The native vegetation consists of oak, elm, and cedar trees, a few pines, and an undergrowth of shrubs and grasses.

Orange silt loam, gently sloping phase (OaB).—The following profile was observed in a wooded area, 1½ miles south of Bethel Church.

A_1 0 to 6 inches, dark grayish-brown (2.5Y 4/2) silt loam; weak fine granular structure; friable; contains many fine roots and some medium-sized fragments of quartz; acid; clear smooth boundary; 4 to 8 inches thick.

A_2 6 to 13 inches, pale-yellow (5Y 8/4) very fine sandy loam (in a few places, silt loam); a few faint mottles of olive yellow (5Y 8/4 to 6/6); moderate medium granular structure; very friable; contains many fine roots and a few fine quartz pebbles; acid; clear smooth boundary; 4 to 9 inches thick.

B_1 13 to 16 inches, grayish-brown (2.5Y 5/2) clay; medium, distinct mottles of strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2); strong medium angular blocky structure; firm; hard when dry and plastic when wet; distinct clay skins; fine roots grow between faces of peds; clear smooth boundary; 3 to 8 inches thick.

B_2 16 to 27 inches, dark-brown (10YR 4/3) clay; many, medium, distinct mottles of strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2); strong medium and coarse angular blocky structure; firm; hard when dry, plastic when wet; distinct clay skins; clear smooth boundary; 8 to 14 inches thick.

C 27 to 29 inches, reddish-yellow (7.5YR 6/6) gravelly silty clay loam mottled with dark yellowish brown (10YR 4/4); massive; seams and lenses of clay; clear abrupt boundary; 1 to 18 inches thick.

D 29 inches +, reddish-brown, brownish-yellow, and yellowish-brown slatelike rock.

The depth to the C horizon ranges from 16 to 36 inches. The thickness of the C horizon ranges from 1 to 18 inches. Some small areas are eroded and have lost practically all of their surface soil.

Use and management.—Only a small percentage of this soil has been cleared. This part is used for crops and pasture. The rest is in forest.

This soil is poorly suited to cultivation because it has poor drainage and is shallow above the heavy clay. It is used for corn, oats, and annual lespedeza. Fair yields of corn and hay can be obtained if the soil is artificially drained, heavily limed and fertilized, and supplied with organic matter. In general, this soil is best suited to hay and pasture; it is suited to such grasses and legumes as tall fescue, whiteclover, bermudagrass, dallisgrass, and annual lespedeza. Pastures must be heavily limed and fertilized. They will probably improve if artificially drained. Capability unit 15 (IVe–2).

Severely gullied land

This unit includes deeply gullied areas of practically all the soils mapped in the county. The slope range is 4 to 25 percent. The individual areas are small. The surface layer varies from gravelly sandy loam to clay. In some places the parent material is at the surface. The structure varies with the texture. The thickness of the subsoil varies, and its color ranges from yellow to red. The subsoil is friable to firm, and the parent material, where it is exposed, is very friable to very firm. Drainage is good.

Severely gullied land (Sc).—This is the only mapping unit of this land type.

Use and management.—These areas are in forest. They are unsuited to crops or pasture. Erosion progresses unless the gullies are stabilized with trees, kudzu, or some kind of engineering structure (fig. 6). The cost of reclaiming this land by mechanical means is prohibitive. Capability unit 22 (VIIe–1).

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Figure 6.—Severely gullied land, once an area of Cecil sandy loam, sloping phase. This land needs to be stabilized to prevent further damage.

Tirzah series

The Tirzah series consists of deep, well-drained, gently sloping to strongly sloping, acid soils. These soils are low in fertility and contain little organic matter. Infiltration is slow. Permeability and capacity for available moisture are moderate.

The surface layer is silt loam of fairly uniform texture. The solum is 3 to 6 feet thick, and the depth to bedrock ranges from 5 to 30 feet.

The Tirzah soils are widely distributed in the southeastern part of the county. They occur with the Georgeville, Herndon, Alamance, and Goldston soils. They are darker red and slightly stickier than the Georgeville soils. They are better drained than the Herndon and Alamance soils and different from them in color throughout the profile. Their profile is deeper and better developed than that of the Goldston soils.

The parent material weathered from dark-colored, basic, metamorphic rocks that are intermingled with Carolina slates or that occur as dikes in Carolina slates. The soils formed under a forest consisting of oak, hickory, dogwood, cedar, holly, and pine trees and an undergrowth of shrubs, briers, and grasses.

Tirzah silt loam, gently sloping phase (TaB).—The following profile was observed in a field a quarter of a mile northeast of Zion Church.

A_p 0 to 9 inches, yellowish-brown (10YR 5/8) silt loam; weak fine crumb structure; very friable; sticky when wet; contains many fine roots; clear smooth boundary; 3 to 10 inches thick.

B 9 to 39 inches, red (10R 4/6) silty clay; moderate medium subangular blocky structure; friable; hard when dry, sticky when wet; faint clay skins; contains a few fine roots in uppermost part; clear wavy boundary; 28 to 50 inches thick.

C 39 to 46 inches +, red (10R 4/8) silty clay loam; faint, small mottles of light red (10R 6/6); massive; contains partially weathered rock and a few small quartz pebbles; 5 to 30 feet to bedrock.

In some areas there are large pebbles or small stones. They are not numerous enough to interfere with tillage. The surface layer is light yellowish brown to dusky red. It is 3 to 12 inches thick. Where it is thickest, it includes a 2- to 5-inch transition layer. The color of the subsoil varies from red to very dusky red, and the thickness ranges from 28 to 60 inches. Showing in some roadcuts or in severely eroded gullies are dikes of quartz, which extend through the parent material at a 45-degree angle almost to the surface layer.

Use and management.—All of this soil has been cultivated. Some is now in crops, and some is in pasture. A small acreage is idle, a small acreage is in forest, and a very small acreage is in nonfarm use.

If this soil is properly managed, it will give good yields of cotton, corn, soybeans, and small grains. If adequately limed and fertilized, it produces normal yields of tall fescue, white clover, crimson clover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. It is moderately well suited to alfalfa. Capability unit 2 (IIe–1).

Tirzah silt loam, eroded gently sloping phase (TaB2).—The 4- to 6-inch plow layer of this soil consists of a mixture of former subsoil and surface soil. The texture varies from silt loam to clay, and the color varies from yellowish red to dark red. Because there is some finer textured material in the surface layer, runoff is greater and infiltration is slower than on Tirzah silt loam, gently sloping phase; consequently, there is a more serious erosion hazard.

Use and management.—Some of this soil is in forest, some is in crops, and some is in pasture. A small acreage is idle.

If this soil receives moderate applications of lime and liberal applications of fertilizer, it produces moderate yields of tall fescue, white clover, crimson clover, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. This soil is also suitable for growing bicolor lespedeza to provide food for wildlife. It is likely to erode if used for row crops. Cotton, corn, soybeans, small grains, and annual lespedeza can be grown if proper measures are taken to conserve soil and water.

Rotations should be 3 to 6 years long. Crops should be planted in contour strips, and two-thirds of the acreage should be in close-growing crops. Terraces and outlets are needed to remove surface water. Capability unit 8 (IIIe–1).

Tirzah silt loam, sloping phase (TaC).—This soil is on the breaks next to Tirzah and Georgeville soils on the gentler slopes. The slope range is 6 to 10 percent. The slopes are shorter than those of Tirzah silt loam, gently sloping phase. The texture of the surface layer is loam to silt loam. The color is yellowish brown to dark brown. The solum is 30 to 48 inches thick.

Use and management.—Most of this soil has been cleared in recent years. A part is in crops, a part is in pasture, and a part is still in forest. A smaller part is idle or in nonfarm use.

If properly managed, this soil produces normal, or above normal, yields of cotton, corn, soybeans, small grains, and annual lespedeza. It also produces good yields of grasses and legumes for hay and pasture. It is suitable for growing bicolor lespedeza to provide food for wildlife.

This soil responds to lime and fertilizer. Rotations should be 3 to 6 years long, and the soil should be strip-cropped, terraced, tilled on the contour, and provided with grassed drainage outlets. Deep-rooted legumes should be grown in the rotation to supply nitrogen and to make the soil more permeable to air and roots. Capability unit 8 (IIIe–1).

Tirzah silt loam, eroded sloping phase (TaC2).—This soil occupies breaks next to gently sloping Tirzah and Georgeville soils. The slope range is 5 to 10 percent. The 3- to 6-inch plow layer is a mixture of former surface soil and subsoil. The texture varies from silt loam to clay. The solum is 20 to 40 inches thick. In some small areas there are shallow gullies and some loose, weathered parent rock on the surface. Because there is some finer textured material in the plow layer, infiltration is slower than in Tirzah silt loam, gently sloping phase.

Use and management.—Most of this soil has been cleared but has reverted to forest, chiefly to pines. A little is in crops, a little is in pasture, and a little is idle.

If properly managed this soil can be used for row crops. It needs moderate applications of lime and liberal applications of fertilizer if used for hay or pasture. It needs fertilizer if used to grow bicolor lespedeza to provide food for wildlife.

This soil should be in close-growing crops three-fourths of the time. All tillage should be on the contour, and all natural drainageways should be sodded. Because of the clayey subsoil, terracing is not practical. Capability unit 14 (IVe–1).

Tirzah silt loam, eroded strongly sloping phase (TaD2).—This soil occupies steep breaks next to less strongly sloping Tirzah and Georgeville soils. The texture of the surface soil varies from silt loam to clay. The thickness of the solum ranges from 18 to 36 inches.

Because of the strong slopes and the fine-textured materials in the surface soil, the erosion hazard is severe. The slopes are shorter and runoff is greater than on Tirzah silt loam, gently sloping phase. Small areas of Goldston soils are included.

Use and management.—Most of this soil is in forest. A small acreage is in crops and pasture.

The difficulty of tilling these strong slopes and the severe hazard of erosion make this soil unsuitable for crops. If moderately limed and heavily fertilized, it will produce fair yields of grasses and legumes for hay and pasture. It is worthwhile to fertilize bicolor lespedeza grown as food for wildlife. Capability unit 19 (VIe–2).

Wickham series

The soils of the Wickham series are deep, well drained, and gently sloping to sloping. These soils are acid. They are low in fertility and contain little organic matter. The rate of infiltration is moderate, and the permeability and moisture-holding capacity are moderate.

The texture of the surface soil varies from sandy loam to clay loam. In low positions, the surface soil is shallow.

Wickham soils occupy second bottoms and stream terraces along the Saluda, Broad, Bush, Enoree, and Little Rivers. They occur with the Hiwassee and Altavista soils.

The parent material was alluvium washed from soils that formed from residuum weathered from granite, gneiss, schist, gabbro, diorite, hornblende, and Carolina slates. The native vegetation consists of oak, hickory,

elm, gum, and pine trees and an undergrowth of elders, vines, briers, and grasses.

Wickham fine sandy loam, gently sloping phase (WaB).—This is a minor soil. The following profile was observed in a cornfield, 11 miles south of Newberry near the Bush River, on the farm-to-market road.

A_p 0 to 8 inches, reddish-brown (2.5YR 5/4) fine sandy loam; weak fine granular structure; very friable; contains many fine roots and a few rounded pebbles; clear smooth boundary; 4 to 14 inches thick.

B_1 8 to 16 inches, reddish-brown (2.5YR 4/4) fine sandy clay loam; weak medium subangular blocky structure; very friable; contains a few fine roots and some coarse sand and gravel; clear smooth boundary; 4 to 12 inches thick.

B_2 16 to 30 inches, reddish-brown (2.5YR 4/4) clay loam mottled with olive yellow (2.5Y 6/8); moderate medium subangular blocky structure; friable; hard when dry, slightly sticky when wet; contains a few fine roots; clear smooth boundary; 10 to 18 inches thick.

B_3 30 to 49 inches, strong-brown (7.5YR 5/6) clay mottled with light olive brown (2.5Y 5/6) and olive yellow (2.5Y 6/8); moderate fine angular blocky structure; friable to firm; hard when dry, slightly sticky when wet; contains a few medium quartz pebbles; clear smooth boundary; 14 to 22 inches thick.

C 49 inches +, strong-brown (7.5YR 5/8) sandy clay loam mottled with reddish yellow (7.5YR 6/8) and olive yellow (5Y 6/8); grades to coarser textured material; massive; contains many small quartz pebbles and some fragments of rock; 20 to 100 feet to bedrock.

Small areas of sandy loam to silty clay loam are included in this mapping unit. Because of erosion, the surface soil varies in color, texture, and thickness. The subsoil varies in color, thickness, and degree of mottling because of differences in degree of development and the influence of adjacent soils.

Use and management.—Most of this soil is used for crops and pasture. A part remains in forest, and a small part is idle or in nonfarm use.

If properly limed and fertilized and otherwise well managed, this soil is well suited to corn, soybeans, and small grains. It is also suited to tall fescue, whiteclover, bermudagrass, dallisgrass, and annual lespedeza for hay and pasture. Crops should be grown in rotation. At all times, half the soil should be in close-growing crops. Crop residues and green-manure crops should be turned under. Capability unit 2 (IIe–1).

Wickham fine sandy loam, sloping phase (WaC).—This inextensive soil has shorter slopes than Wickham fine sandy loam, gently sloping phase. The surface soil, unless eroded, is more uniform in thickness than that of the gently sloping phase. It ranges in thickness from 8 to 14 inches. Runoff is more rapid, and the erosion hazard is more severe.

Use and management.—Most of this soil has been used for crops or pasture. Part of it has reverted to forest, and part has ben planted to pine trees. Some of it is still in crops or pasture, and a small acreage is in nonfarm use.

If well managed, this soil is productive of corn, soybeans, small grains, tall fescue, whiteclover, bermudagrass, dallisgrass, bahiagrass, sericea lespedeza, and annual lespedeza.

This soil responds to good management. Crops should be grown in a rotation. They should be planted in contour strips, where practicable, and two-thirds of the soil should be in close-growing crops. Tillage should be on the contour. Crop residues and green-manure crops should be utilized, and liberal amounts of lime and fertilizer applied. Terraces and grassed drainage outlets are needed. Capability unit 8 (IIIe–1).

Wilkes series

The Wilkes series consists of shallow, acid, gently sloping to steep soils. Thése soils are low in fertility and contain little organic matter. Runoff is very rapid. The rate of infiltration is moderate, permeability is slow, and the capacity for available moisture is very low.

The color of the subsoil is variable—red, brown, yellow, or mottled. The consistence of the subsoil varies from nonplastic to plastic. In some places the subsoil contains a considerable amount of gravel. The places where there is enough gravel to interfere with cultivation are indicated on the soil map by gravel symbols. In some places there is no subsoil. The solum is 2 to 15 inches thick, and the depth to bedrock ranges from 1 to 5 feet.

Wilkes soils are widely distributed north of the slate belt. They occur with Cecil, Appling, Durham, Enon, Helena, Iredell, and Worsham soils. They have a shallower solum than the adjacent soils, and they have much less horizon differentiation.

The parent material was residuum weathered from acidic, crystalline rock cut by dikes of dark-colored basic rock. These soils have developed under a forest cover that consists of oak, cedar, and pine trees and an undergrowth of shrubs and briers.

Wilkes sandy loam, gently sloping phase (WbB).—The following profile was observed a quarter of a mile east of Mount Nebo Church, along a county road, in an abandoned field on which a few pine trees are growing.

A_p 0 to 8 inches, brown (7.5YR 5/4) sandy loam; weak fine granular structure; very friable; contains many fine roots and a few medium and fine quartz pebbles; acid; clear smooth boundary; 3 to 10 inches thick.

B_2 8 to 13 inches, strong-brown (7.5YR 5/8) to yellow, brown, red or mottled sandy clay loam; moderate medium subangular blocky structure; friable; contains many fine roots and a few small quartz pebbles; friable to firm; clear smooth boundary; 2 to 8 inches thick.

C_1 13 to 19 inches, strong-brown (7.5YR 5/8) sandy clay loam mottled with olive yellow (5Y 6/6); weak massive; contains many fine and a few medium and large quartz pebbles, fragments of disintegrated granite, and many fine mica flakes; clear smooth boundary; 0 to 12 inches thick.

D 19 inches +, weathered granite rock containing hard and soft places; bedrock.

Use and management.—Practically all of this soil has been cultivated, but now most of it has reverted to forest in which pines predominate. A small acreage is still used for crops or pasture. A few acres are idle or in nonfarm use.

This soil is suited to corn, cotton, sorghum, small grains, crimson clover, bermudagrass, bahiagrass, sericea lespedeza, and annual lespedeza. The soil responds to lime and fertilizer and should be kept in close-growing crops two-thirds of the time. Capability unit 11 (IIIe–5).

Wilkes sandy loam, sloping phase (WbC).—This soil has a slope range of 6 to 10 percent. The texture of the surface soil varies from gravelly sandy loam to sandy loam. The subsoil is generally 2 to 5 inches thick, but in some places there is no subsoil. Because of the stronger slope, runoff is more rapid than on Wilkes sandy loam, gently sloping phase. The depth to bedrock ranges from 1 to 4 feet.

Use and management.—Most of this soil is in forest. A very small acreage is used for crops and pasture or is idle.

Because this soil is shallow and sloping, it should be used infrequently for cultivated crops. If great care is taken to reduce runoff, it can be used for small grains and grasses. Much of it probably could be used for permanent pasture or forest. Annuals planted to provide food for wildlife need to be fertilized. Capability unit 16 (IVe–4).

Wilkes sandy loam, eroded sloping phase (WbC2).—This soil has a slope range of 6 to 10 percent. Its surface layer is 2 to 6 inches thick; it consists of a mixture of former surface soil and subsoil, or of a mixture of the weathered parent material and former surface soil. The depth to bedrock ranges from 1 to 3 feet. Runoff is more rapid and erosion is more active than on Wilkes sandy loam, gently sloping phase.

Use and management.—Although this soil has been cleared and cultivated, practically all of it is now in forest consisting of scrub pines mixed with scrub hardwoods. A very small acreage is idle.

Because it is shallow, sloping, and low in fertility, this soil is best suited to forest. Capability unit 23 (VIIe–2).

Wilkes sandy loam, strongly sloping phase (WbD).—This soil has a slope range of 10 to 15 percent. The texture of the surface layer varies from gravelly sandy loam to sandy loam. The thickness of the D horizon ranges from 10 to 20 inches, and the depth to bedrock ranges from 1 to 4 feet. Runoff is more rapid than on Wilkes sandy loam, gently sloping phase, and the erosion hazard is more serious.

Use and management.—Practically all of this soil is in forest. Very small acreages are in pasture or in crops, and a little is idle.

This soil responds to lime and fertilizer. Because it is erodible and has strong slopes, it is best suited to close-growing crops or to forest. Capability unit 16 (IVe–4).

Wilkes sandy loam, eroded strongly sloping phase (WbD2).—This soil has a slope range of 10 to 15 percent. The surface layer is 2 to 6 inches thick. In most places it consists of a mixture of former surface soil and subsoil or of parent material and former surface soil. The texture varies from gravelly sandy loam to sandy clay loam. The depth to bedrock ranges from 1 to 3 feet.

Use and management.—Practically all of this soil is in forest. A very small acreage is idle.

This soil responds to lime and fertilizer, but, because of strong slopes and erosion, it is best suited to forest. Capability unit 23 (VIIe–2).

Wilkes sandy loam, moderately steep phase (WbE).—This soil generally occupies steep breaks along the larger streams of the county outside the slate belt. The slope range is 15 to 25 percent. The surface soil is 8 to 14 inches thick. The texture of the surface soil varies from gravelly sandy loam to sandy loam. The very weakly developed subsoil is 2 to 4 inches thick. In some places the surface soil rests directly on the parent material. The depth to bedrock ranges from 1 to 4 feet. Runoff is rapid.

Use and management.—Most of this soil is in a forest of pines and hardwoods. Because of moderately steep slopes, very rapid runoff, and low fertility, this soil is best suited to forest. Capability unit 20 (VIe–3).

Wilkes sandy loam, eroded moderately steep phase (WbE2).—This soil occupies breaks along the larger streams outside the slate belt. The slope range is 15 to 25 percent. The surface layer is 1 to 6 inches thick. The texture is generally sandy loam to clay loam. In places the parent material is mixed with the surface soil. The depth to bedrock ranges from 1 to 4 feet.

This is a droughty soil. It is very susceptible to further erosion. Shallow gullies and sheet erosion are common.

Use and management.—Most of this soil is in forest, the use to which it is best suited. The forest consists largely of pines, hardwoods, and shrubs. A very small acreage is idle. Capability unit 23 (VIIe–2).

Wilkes sandy loam, steep phase (WbF).—This soil occupies bluffs along the rivers outside the slate belt. The slopes are more than 25 percent and are shorter than those of Wilkes sandy loam, gently sloping phase. The surface soil is 4 to 10 inches thick. It varies from gravelly sandy loam to sandy loam. Generally, the surface soil rests directly on the parent material. In some places there is a thin, weakly developed subsoil. Runoff is much more rapid than on the more gently sloping Wilkes soils, and the erosion hazard is serious. Shallow gullies are common.

Use and management.—All of this soil is in forest, to which it is fairly well suited. Because of steep slopes, excessive drainage, and poor fertility, it is not suitable for crops or pasture. Capability unit 23 (VIIe–2).

Wilkes sandy loam, eroded steep phase (WbF2).—This soil occupies steep bluffs along the rivers outside the slate belt. The slope is more than 25 percent. The surface layer is 2 to 4 inches thick. It consists of a mixture of former subsoil and original surface soil. The subsoil is weakly developed and is only 1 to 3 inches thick. The depth to bedrock ranges from 1 to 3 feet. The bedrock is generally soft enough to be penetrated by roots. Shallow gullies are common.

Use and management.—This soil is in forest. It is suited to hardwoods and pines. Capability unit 23 (VIIe–2).

Worsham series

The Worsham series consists of dark-colored, gently sloping, poorly drained soils. These soils are strongly acid and low in fertility. Infiltration is moderate, and permeability is slow. Except in seasons of extreme drought, the available moisture capacity is adequate.

The surface soil is dark gray to black. It ranges in thickness from 6 to 30 inches. On the surface in some areas there is a 3- to 18-inch deposit of recent local alluvium. The subsoil is generally gray, compact clay. In places where these soils occur with well-drained, red soils, there are red and brown mottles in the B horizon. The thickness of the solum ranges from 24 to 60 inches.

Worsham soils are widely distributed throughout the county. They occur at the heads of drains, at the base of slopes, and along small drainageways. They are adjacent to Appling, Durham, Colfax, Wilkes, Herndon, Alamance, and Goldston soils. They are distinguished from the associated soils by their predominantly gray color and by their tight subsoil. In areas next to Appling, Durham, Colfax, and Wilkes soils, the Worsham soils have a sandy surface soil. Where they occur with Hern-

don, Alamance, and Goldston soils, the surface soil is silt loam.

The parent material was residuum weathered from granite, gneiss, schist, and Carolina slates. These soils have developed under forest, which was composed of hardwood trees and an undergrowth of canes, shrubs, and briers.

Worsham sandy loam, gently sloping phase (WcB).—The following profile was observed in a pasture 5 miles west of Newberry on Belfast Road.

- A_1 0 to 5 inches, black (2.5Y 2/0) sandy loam; weak fine granular structure; very friable; contains many fine roots and a few small quartz pebbles; clear smooth boundary; 3 to 8 inches thick.
- A_3 5 to 12 inches, dark-gray (10YR 4/1) sandy loam; weak medium granular structure; very friable; contains many fine roots; clear smooth boundary; 5 to 10 inches thick.
- B_1 12 to 22 inches, grayish-brown (10YR 5/2) sandy clay loam mottled with light olive brown (2.5Y 5/4); weak medium subangular blocky structure; friable; contains a few fine roots; clear smooth boundary; 8 to 12 inches thick.
- B_2 22 to 33 inches, grayish-brown (10YR 5/2) clay; common, medium, distinct mottles of light gray (10YR 7/2); strong coarse angular blocky structure; firm; hard when dry and sticky when wet; contains a few fine roots between aggregates; clear smooth boundary; 8 to 15 inches thick.
- B_3 33 to 40 inches, gray (10YR 6/1) clay; faint, few to common, fine to medium mottles of strong brown (7.5YR 5/8); strong coarse angular blocky structure; contains a few fine mica flakes; hard when dry, sticky and slick feeling when wet; clear smooth boundary; 5 to 10 inches thick.
- C_1 40 inches +, gray (10YR 6/1) sandy clay grading to coarser textured material; massive; contains numerous fine mica flakes, a few small quartz pebbles, and small pieces of disintegrated granite; depth to rock is variable.

Use and management.—A large part of this soil is used for pasture, most of which is improved. A small acreage has reverted to trees, mostly undesirable hardwoods. Because of poor drainage and the heavy subsoil, this soil is poorly suited to cultivation, but it can be made fairly productive of pasture. Capability unit 17 (IVw–1).

Use and Management of the Soils

This section includes a history of agriculture in Newberry County from the time of the early settlers to the present. The management of each soil is discussed under the capability unit grouping. Tables of estimated yields and relative suitability of the soils for different crops are presented. General pasture management is also discussed.

Agriculture

An early history of Newberry County states that the first settlers found a forest of oak, hickory, walnut, pine, elm, and poplar trees entwined with muscadine vines and other wild grapevines. The ground was covered with peavine and fruit-bearing shrubbery (*9*).

In the early years farms were small and self-sufficient. Between the end of the Revolutionary War and 1810, bacon, beef, beeswax, flour, live cattle, and skins of wild animals were produced commercially in the county and shipped to Charleston. By 1800, cotton and tobacco were being shipped.

Plantations soon supplanted the first small farms, and cotton became the leading crop. Food crops and live cattle were no longer exported, but food for home use was still produced on the plantations. Growing cotton continuously resulted in much damage from sheet and gully erosion in the uplands. When a field was severely eroded, it was abandoned to grow up in povertygrass, briers, and broomsedge, and more forested land was cleared. In 1840, 168,000 acres was in cultivation (*11*).

After the Civil War cotton was grown almost exclusively. The plantation system of farming was supplanted by the tenant system. By 1889 cotton was grown on 72,333 acres, and the total acreage of all other crops was only 56,295. In 1909 cotton occupied 75,662 acres, compared with 46,980 acres in corn, wheat, and oats. By 1918 cotton was practically the only cash crop, and it was grown on an even larger acreage than in 1909. Since 1929 the acreage in cotton has been declining (table 3). Various factors have contributed to the decline, among them the following: Infestation by boll weevils, low prices during the depression, Government programs to reduce crop surpluses, conservation programs, and improved farming methods that produce more cotton per acre. Nevertheless, cotton remained the chief cash crop until the middle 1930's.

In the 1930's farmers began mechanizing farm operations. In 1954, there were 1,154 tractors in the county. The surplus farm labor is now employed by forest-products companies and in other industries.

TABLE 3.—*Number of acres of principal crops grown in stated years*

Crop	1929	1939	1949	1954
	Acres	*Acres*	*Acres*	*Acres*
Cotton harvested	37, 224	24, 883	16, 119	7, 882
Corn for all purposes	27, 984	35, 769	22, 694	15, 324
Wheat threshed or combined	4, 235	8, 728	5, 168	3, 838
Oats threshed or combined	6, 166	13, 870	13, 850	17, 103
Barley threshed or combined	36	664	1, 169	1, 083
Small grains cut for hay	191	223	699	5, 007
Lespedeza cut for hay	(1)	3, 271	10, 526	7, 617
Lespedeza seed harvested	(1)	984	3, 974	707

[1] Figures not available.

Crops

At present, the principal crops of Newberry County are oats, corn, cotton, wheat, barley, and lespedeza. The acreage of each of the chief crops for stated years between 1929 and 1954 is given in table 3. During that period, the acreage in row crops declined and the acreage in close-growing crops, particularly oats and lespedeza, increased. Oats are grown for grain or for grazing. Lespedeza is grown for hay or for seed. In a wet year, annual lespedeza will yield as much as 1½ tons of hay per acre. Sericea lespedeza requires one season to establish a root system. After that, it can be cut 2 or 3 times a season. Pastures of sericea can be grazed from April until the first frost. If fertilized annually, sericea produces good hay or pasture for a number of years.

Crops less extensively grown in the county include soybeans, sorghum, alfalfa, cowpeas, rye, peanuts, Irish potatoes, sweetpotatoes, watermelons, cantaloups, turkish tobacco, and lupine. Soybeans and sorghum are grown for silage. Milo, a grain sorghum, grows especially well. Vegetables are grown for home use. Some pecans of high quality are produced. However, most home orchards are not well kept, and the potential yields are not enough to justify spending the money necessary to combat insects and disease.

Livestock

There were more than two and a half times as many cattle in the county in 1954 as in 1930 (table 4). The number of hogs increased slightly between 1930 and 1954, and the number of turkeys raised increased tremendously. As in most places throughout the country, the number of horses and mules decreased. Chickens are raised extensively.

TABLE 4.—*Livestock of all ages on farms in stated years*

Livestock	1930	1940	1950	1954
	Number	*Number*	*Number*	*Number*
Mules and mule colts	4, 251	[1] 3, 911	2, 344	1, 381
Horses and colts	351	[1] 275	389	262
Cattle and calves	6, 478	[1] 7, 318	11, 877	19, 195
Milk cows	3, 197	3, 669	5, 101	6, 325
Hogs and pigs	7, 822	[2] 9, 146	9, 699	8, 887
Turkeys raised	[3] 1, 563	[4] 3, 553	[5] 30, 130	69, 879
Chickens	[1] 80, 481	[2] 87, 918	[2] 79, 208	[2] 102, 408

[1] Over 3 months old on April 1.
[2] Over 4 months old November 21–27.
[3] 1929.
[4] 1939.
[5] 1949.

Trend in size and type of farm

In 1954, there were fewer but larger farms than in 1950, and fewer general farms. The 2,602 farms in 1950 averaged 100.2 acres in size; the 2,223 farms in 1954 averaged 104.5 acres in size. In 1950, 854 farms produced chiefly field crops other than vegetables, fruits, and nuts; in 1954, the number of farms of this type had decreased to 456. In 1950, there were 89 dairy farms, 79 poultry farms, and 34 livestock farms other than dairy and poultry. In 1954, the number of dairy farms had increased to 129, the number of poultry farms had increased to 95, and the number of livestock farms, to 81.

Land distribution and use

The total area of Newberry County is 410,240 acres, including 8,320 surface acres of water, most of which consists of the backwaters of Lake Murray, Lake Greenwood, and Parr Shoals. Sumter National Forest occupies 54,951 acres. The number of acres in farms is 232,359. This is 57.8 percent of the total land area. In 1954, according to the Census of Agriculture, 57,763 acres was cropland harvested; 10,419 acres was cropland not harvested and not pastured; 17,220 acres was cropland used only for pasture; 14,775 acres, not cropland and not woodland, was in pasture; 126,795 acres was in farm woodland. All other land—house lots, roads, wasteland—covered 5,387 acres.

There have been two major changes in land use. The first occurred during and immediately after the Civil War, when large acreages of eroded land under cultivation were abandoned and grew up in pine trees. The second started in the 1920's and is continuing at the present time. In 1954 about 68 percent of the county was under forest.

Conservation

The early settlers cleared land, cropped it intensively, then abandoned it and cleared new land. Later, large acreages were used continuously for cotton; there was no systematic rotation of crops and no effort to replenish the supply of organic matter. At one time the bottom lands were extensively cultivated, but, after the uplands were cleared, floods became so destructive that cultivating the bottom lands was impractical.

The change to conservation farming began in the 1930's. The Soil Erosion Service and Civilian Conservation Corps, both established in the early thirties, began the trend. In 1939 Newberry County became part of the Lower Saluda Soil Conservation District, and in 1947 it was established as a separate district. The Soil Conservation Service, established in 1935, has been providing technical assistance on farm planning through the soil conservation districts.

Most of the farmers in the county now follow systematic crop rotations and keep half to three-fourths of their arable land in close-growing crops. Some of the bottom lands that are flooded too often to be cultivated are used for pasture. Terracing has helped to reclaim severely eroded areas in the uplands, but some deep gullies remain. Cultivated fields have been protected by terracing, sodding waterways, tilling on the contour, and rotating crops.

Large areas have reverted to or been planted to pine trees. Nearly 55,000 acres is now owned by the United States Forest Service, and substantial acreages are owned by paper companies, forest-products companies, and private landowners.

Acreage allotments and the soil bank program, intended primarily to reduce crop surpluses, have also resulted in the reduction of acreage used for row crops and have thus aided conservation efforts.

Capability Groups of Soils

Capability grouping is a system of classification used to show the relative suitability of soils for crops, grazing, forestry, or wildlife. It is a practical grouping based on the needs and limitations of the soils, the risks of damage to them, and also their responses to management. In this report, soils have been grouped at three levels: The capability unit, the subclass, and the class.

The capability unit, which can also be called a management group of soils, is the lowest level of capability grouping. A capability unit is made up of soils similar in management need, in risk of damage, and in general suitability for use.

The next broader grouping, the subclass, is used to indicate the dominant kind of limitation. The letter symbol "e" means that the main limiting factor is risk of erosion if the plant cover is not maintained. The symbol "w" means that excess water retards plant growth or interferes with cultivation. The symbol "s" means that the soils are shallow, droughty, or low in fertility.

The broadest grouping, the class, is identified by Roman numerals. All the soils in one class have limitations and management problems of about the same degree, but of different kinds. All the classes except class I may have one or more subclasses.

In classes I, II, and III are soils that are suitable for annual or periodic cultivation of annual or short-lived crops.

Class I soils are those that have the widest range of use and the least risk of damage. They are level or nearly level, productive, well drained, and easy to work. They can be cultivated with almost no risk of erosion and will remain productive if managed with normal care.

Class II soils can be cultivated regularly, but they do not have quite so wide a range of suitability as class I soils. Some class II soils are gently sloping and, consequently, need moderate care to prevent erosion. Other soils in class II may be slightly droughty, slightly wet, or somewhat limited in depth.

Class III soils can be cropped regularly, but they have a narrower range of use. They need even more careful management.

In class IV are soils that should be cultivated only occasionally or only under very careful management.

In classes V, VI, and VII are soils that normally should not be cultivated for annual or short-lived crops but that can be used for pasture, for woodland, or for plants that shelter wildlife.

Class V soils are nearly level and gently sloping, but they are droughty, wet, low in fertility, or otherwise unsuitable for cultivation.

Class VI soils are not suitable for crops because they are steep, or droughty, or otherwise limited, but they give fair yields of forage and fair to high yields of forest products. Some soils in class VI can, without damage, be cultivated enough so that fruit trees or forest trees can be set out or pasture crops seeded.

Class VII soils provide only poor to fair yields of forage. Yields of forest products may be fair to high. The soils have characteristics that severely limit their use for pasture and, in some places, for woodland.

In class VIII are soils that have practically no agricultural use. Some areas have value for watershed protection, wildlife shelter, or scenery. None of the soils in Newberry County are in class VIII.

The soils of Newberry County have been grouped into the following classes, subclasses, and units.

Class I.—Soils that are easy to farm and have few limitations that restrict their use.
- Unit 1 (I–1).—Deep well-drained soil that is not erodible.

Class II.—Soils that have some limitations that reduce the choice of plants or require moderate conservation practices.
- Subclass IIe.—Gently sloping soils that are subject to erosion.
  - Unit 2 (IIe–1).—Gently sloping, deep, well-drained soils that have moderate permeability.
  - Unit 3 (IIe–2).—Deep, mostly well-drained soils that have light-colored surface soil.
  - Unit 4 (IIe–3).—Soils that have moderately plastic subsoil.
  - Unit 5 (IIe–4).—Soil that has plastic, heavy clay subsoil.
- Subclass IIw.—Well drained to somewhat well drained soils on bottom lands that are subject to flooding.
  - Unit 7 (IIw–2).—Deep, well-drained soils on first bottoms.
- Subclass IIs.—Gently sloping soils limited by low water-supplying capacity.
  - Unit 6 (IIs–1).—Excessively drained upland soils that have thick loamy sand surface soil.

Class III.—Soils that have severe limitations that reduce the choice of plants or require special conservation practices, or both.
- Subclass IIIe.—Sloping soils that are subject to erosion.
  - Unit 8 (IIIe–1).—Permeable soils that have red clay subsoils.
  - Unit 9 (IIIe–2).—Gently sloping to sloping soils that have gray to brown surface soil.
  - Unit 10 (IIIe–3).—Soils that have moderately plastic subsoil.
  - Unit 11 (IIIe–5).—Shallow soil that has a thin subsoil or no subsoil.
- Subclass IIIw.—Imperfectly drained and poorly drained soils.
  - Unit 12 (IIIw–2).—Deep, moderately permeable, somewhat poorly drained soil on first bottoms.
  - Unit 13 (IIIw–3).—Gently sloping, slowly permeable, upland soils.

Class IV.—Soils that have very severe limitations that restrict the choice of plants, require very careful management, or both.
- Subclass IVe.—Hilly soils that are subject to severe erosion.
  - Unit 14 (IVe–1).—Deep, well-drained, permeable soils.
  - Unit 15 (IVe–2).—Soils that have firm, moderately plastic clay subsoil.
  - Unit 16 (IVe–4).—Shallow, poorly developed soils.
- Subclass IVw.—Excessively wet soils.
  - Unit 17 (IVw–1).—Narrow, elongated areas of "crawfish land" along small streams.

Class V.—Soils that have little or no erosion hazard but have other limitations that are impractical to remove and that limit their use largely to pasture, range, woodland, or wildlife food and cover.
- Subclass Vw.—Poorly drained soils.
  - Unit 18 (Vw–2).—Elongated, excessively wet areas along small streams.

Class VI.—Soils that have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.
- Subclass VIe.—Hilly and steep soils.
  - Unit 19 (VIe–2).—Severely eroded and moderately steep soils that have friable subsoil.
  - Unit 20 (VIe–3).—Moderately steep, shallow soil that has weak profile development.
  - Unit 21 (VIe–4).—Soils that have moderately plastic clay subsoil.

Class VII.—Soils that have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife.

Subclass VIIe.—Steep or erodible soils and gullied land.

Unit 22 (VIIe–1).—Eroded or severely eroded, strongly sloping to steep soils that have red clay subsoil and friable parent material.

Unit 23 (VIIe–2).—Shallow soils that have weak profile development.

Unit 24 (VIIe–3).—Soils that have very firm subsoil or parent material.

In the following pages each capability unit is described, the soils in each are listed, and some suggestions for use and management are given.

CAPABILITY UNIT 1 (I-1)

Deep well-drained soil that is not erodible

This unit consists of one land type—Local alluvial land, well drained—which is widely distributed throughout the county in small areas. It is nearly level to very gently sloping. It occurs in depressions in the uplands.

This land type has a sandy loam or silt loam surface soil and a permeable, very friable subsoil. It is acid. It is moderate in fertility and has a moderate capacity for available moisture. It has favorable moisture relations. Tilth is easily maintained. Runoff causes no serious damage.

Local alluvial land, well drained, is suited to intensive use for truck crops, corn, soybeans, grain sorghum, and small grains. It is also well suited to such hay and pasture plants as annual lespedeza, tall fescue, dallisgrass, bermudagrass, and whiteclover. It responds well to lime and fertilizer. It needs to be regularly limed and fertilized to maintain a good crop of pasture plants and to produce a good hay crop. Row crops need liberal amounts of lime and fertilizer. Green-manure crops and crop residues should be turned under to maintain the supply of organic matter, increase bacterial activity, conserve the soil, and increase the available moisture capacity. Maintaining the supply of organic matter is especially important if row crops are grown every year.

CAPABILITY UNIT 2 (IIe–1)

Gently sloping, deep, well-drained soils that have moderate permeability

The soils of this unit are widely distributed. They are fairly extensively cropped. The soils are—

Cecil sandy loam, gently sloping phase.
Davidson loam, gently sloping phase.
Georgeville silt loam, gently sloping phase.
Hiwassee sandy loam, gently sloping phase.
Lloyd sandy loam, gently sloping phase.
Tirzah silt loam, gently sloping phase.
Wickham fine sandy loam, gently sloping phase.

The surface soil is yellowish-brown, reddish-brown, or dark-brown, very friable sandy loam to silt loam. It ranges in thickness from 4 to 14 inches. The friable to firm subsoil affords a deep root zone.

All these soils are acid. Although they contain little organic matter and are low in fertility, they are better supplied with plant nutrients and organic matter than most soils in the county. Leaching is less rapid than in the sandier soils. The capacity for available moisture is moderate.

These soils are well suited to cultivation. They have favorable moisture relations and physical qualities. They respond to good management. If properly managed, they are suited to short rotations. Close-growing crops should be grown for 2 years out of 4. Suitable crops are cotton, corn, grain sorghum, soybeans, small grains, peaches, vegetables, sericea lespedeza, annual lespedeza, crimson clover, tall fescue, bermudagrass, dallisgrass, and bahiagrass. Alfalfa, although not well suited to most of these soils, is suited to the Davidson, Lloyd, and Cecil soils.

These soils are easy to work and are easily kept in good tilth. Tillage should be on the contour. A complete water-disposal system is needed. Long slopes should be stripcropped.

These are good soils for growing plants for wildlife. Field borders can be planted to bicolor lespedeza to provide food and protection.

CAPABILITY UNIT 3 (IIe–2)

Deep, mostly well-drained soils that have light-colored surface soil

The soils of this unit are widely distributed throughout the county. Much of the acreage is cropped. The soils are—

Alamance silt loam, gently sloping phase.
Altavista fine sandy loam, gently sloping phase.
Appling sandy loam, gently sloping phase.
Durham sandy loam, gently sloping phase.
Herndon silt loam, gently sloping phase.

These soils are moderately well drained to well drained. The very friable sandy loam to silt loam surface soil is 5 to 16 inches thick. The subsoil is brown to yellow, friable, and moderately permeable. These soils have a lighter colored, thicker surface soil than those of unit 2 (IIe–1), a more slowly permeable subsoil, and a lower capacity for available moisture. The root zone is deep.

All of these soils are acid. They are low in fertility and contain little organic matter. They have a moderately low capacity for available moisture.

These soils are well suited to cultivation, and they respond well to proper management. Under good management they are suited to rotations 2 to 7 years long, in which close-growing crops are grown at least half the time. They are suited to cotton, corn, soybeans, small grains, sericea lespedeza, and annual lespedeza. They are fairly productive of kudzu, fescue, bahiagrass, dallisgrass, and bermudagrass, for hay and pasture. Crimson clover does fairly well on the Appling and Herndon soils in this unit.

These are good soils for growing bicolor lespedeza to provide food and protection for wildlife. Field borders and forest openings can be planted to it.

These soils are easy to work and to maintain in good tilth. Tillage should be on the contour, and long slopes should be stripcropped. Complete water-disposal systems are needed.

CAPABILITY UNIT 4 (IIe–3)

Soils that have moderately plastic subsoil

The soils in this unit are nearly level to gently sloping. Much of the acreage is cropped. The soils are—

Efland silt loam, gently sloping phase.
Enon sandy loam, gently sloping phase.
Helena sandy loam, gently sloping phase.
Mecklenburg sandy loam, gently sloping phase.

These soils are moderately deep and moderately well drained. Their very friable sandy loam to silt loam surface soil is olive to brown and 4 to 16 inches thick. Their firm to very firm subsoil is mottled with reddish brown and yellow. It provides a deep root zone.

All of these soils are acid. They contain little organic matter and are low in fertility. They are slowly permeable and have a moderate capacity for available moisture.

These soils respond to proper management and are fairly well suited to cultivation. Chiefly because of their more plastic clay subsoil and their slower permeability, they are not so well suited to cultivation as those in units 2 (IIe–1) and 3 (IIe–2). They are good soils for hay and pasture. Under good management they are suited to rotations lasting 2 to 4 years, in which close-growing crops are grown half the time. They are suited to cotton, corn, small grains, sericea lespedeza, annual lespedeza, whiteclover, tall fescue, dallisgrass, and bermudagrass. The Mecklenburg soil is moderately well suited to crimson clover.

These are good soils for growing bicolor lespedeza to provide food and protection for wildlife. Field borders and forest openings can be planted to bicolor.

These soils are fairly easy to work. They should be tilled on the contour. Complete water-disposal systems are needed. Long slopes should be stripcripped.

CAPABILITY UNIT 5 (IIe–4)

Soil that has plastic, heavy clay subsoil

Iredell sandy loam, gently sloping phase, is the only soil in this unit. It is moderately deep and nearly level to gently sloping. It is acid although it was derived from basic rocks.

The surface soil is dark-brown to olive, very friable sandy loam. It is 8 to 14 inches thick. The subsoil is firm and very slowly permeable. The root zone is moderately deep.

This soil is moderately well drained and has a high water-holding capacity. It is moderately fertile and contains a moderate supply of organic matter. It is deficient in potassium.

Much of this soil is in pasture. Only a small part is in cultivation, although the smooth surface and favorable moisture relations make it well suited to general farm crops as well as to hay and pasture plants. It is suited to cotton, corn, small grains, tall fescue, vetch, whiteclover, dallisgrass, bermudagrass, and annual lespedeza. It is poorly suited to deep-rooted plants because of the heavy clay subsoil. Suggested rotations include the following: (1) 2 or more years of fescue and whiteclover and 2 years of row crops; or (2) 1 year of a small grain and lespedeza and 1 year of a row crop. Annuals grown to provide food for wildlife need to be fertilized.

This soil is not hard to work. Good tilth is fairly easily maintained. Contour tillage and complete water-disposal systems are needed. The plastic nature of the subsoil, however, makes it difficult to construct terraces or ponds.

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CAPABILITY UNIT 6 (IIs–1)

Excessively drained upland soils that have thick loamy sand surface soil

Most of this unit occurs west of Newberry. Much of it is cropped. The soils in this unit are—

Durham loamy sand, gently sloping thick surface phase.
Helena loamy sand, gently sloping thick surface phase.

The sandy surface soil is 18 to 30 inches thick. These soils have a very deep root zone. They are acid. Their natural fertility is low, and they contain little organic matter. They have rapid infiltration and a low moisture-holding capacity. They are moderately permeable. They are droughty and excessively leached.

These soils are less suitable for cultivation than the soils of subclass IIe. If heavily fertilized they are fairly well suited to sweetpotatoes, peanuts, watermelons, corn, crotalaria, oats, rye, and velvetbeans. They are fairly good for bahiagrass, bermudagrass, sericea lespedeza, and kudzu. Strips of bicolor lespedeza should be planted on the borders of woods to provide food for wildlife.

These soils are easy to work. They need contour tillage and a complete water-disposal system.

CAPABILITY UNIT 7 (IIw–2)

Deep, well-drained soils on first bottoms

The soils of this unit are nearly level to gently sloping. They are widely distributed in fairly narrow strips along the streams. They are sometimes flooded. The soils are—

Congaree fine sandy loam.
Congaree silt loam.
Mixed alluvial land, well drained.

These soils are acid. They are moderately fertile and have a moderate supply of organic matter. They are moderately to rapidly permeable and have a high capacity for available moisture.

These soils are very productive of vegetables, corn, small grains, and annual lespedeza. They are well suited to tall fescue, whiteclover, bermudagrass, and bahiagrass. They are among the best soils in the county for growing food for wildlife. Grasses for deer and bicolor lespedeza for quail should be planted in small forest clearings.

These soils respond well to good management. Good tilth is easily maintained. Maintaining a moderate supply of organic matter is important if row crops are grown intensively. Grasses and legumes grown for hay and pasture need to be regularly limed and fertilized.

CAPABILITY UNIT 8 (IIIe–1)

Permeable soils that have red clay subsoils

The soils of this unit are deep and well drained. They are among the best soils in the county for cultivation. They are—

Cecil sandy loam, eroded gently sloping phase.
Cecil sandy loam, sloping phase.
Georgeville silt loam, sloping phase.
Georgeville silty clay loam, eroded gently sloping phase.
Hiwassee sandy loam, eroded gently sloping phase.
Hiwassee sandy loam, sloping phase.
Lloyd sandy loam, eroded gently sloping phase.
Lloyd sandy loam, sloping phase.
Lloyd sandy loam, eroded sloping phase.
Lockhart clay loam, severely eroded gently sloping phase.
Tirzah silt loam, eroded gently sloping phase.
Tirzah silt loam, sloping phase.
Wickham fine sandy loam, sloping phase.

These soils have a friable to very friable, yellowish-brown to dark-red surface soil that is 2 to 12 inches thick. The subsoil is friable and provides a moderately deep to deep root zone. These soils are acid. They contain little organic matter and are low in fertility. They have a moderate capacity for available moisture.

If properly limed and fertilized, these soils are productive of cotton, corn, small grains, kudzu, crimson clover, white clover, bermudagrass, dallisgrass, tall fescue, sericea lespedeza, and annual lespedeza. The Cecil and Lloyd soils are fairly well suited to alfalfa. The uneroded soils produce average yields of bahiagrass.

These soils are easy to work. They should be in close-growing crops at least two-thirds of the time. Contour tillage and complete water-disposal systems are needed. Long slopes should be stripcropped. The following are examples of generally accepted rotations: (1) 4 or more years of tall fescue and whiteclover or sericea lespedeza and 2 years of row crops; (2) 1 year of a small grain and annual lespedeza, 1 year of volunteer lespedeza or a small grain and lespedeza, and 1 year of a row crop.

Plants to provide food and cover for wildlife can be grown in field borders and in small, irregular corners.

CAPABILITY UNIT 9 (IIIe–2)

Gently sloping to sloping soils that have gray to brown surface soil

The soils of this unit are widely distributed. They are deep and well drained. The soils are—

Alamance silt loam, sloping phase.
Appling sandy loam, eroded gently sloping phase.
Appling sandy loam, sloping phase.
Durham sandy loam, sloping phase.
Durham loamy sand, sloping thick surface phase.
Herndon silt loam, eroded gently sloping phase.
Herndon silt loam, sloping phase.

These soils have a very friable surface soil and a friable to firm, yellow to brown subsoil. The surface soil is deeper than that of the soils in unit 8 (IIIe–1), and the subsoil is somewhat more slowly permeable. The root zone is deep.

All of these soils are acid. They contain little organic matter and are low in fertility. They respond to fertilization. They have a fairly low capacity for available moisture and are a little more droughty and more subject to leaching than the soils of unit 8 (IIIe–1).

These soils are intensively cropped. If properly limed and fertilized, they are suited to cotton, corn, small grains, annual lespedeza, sericea lespedeza, and bermudagrass. The Appling and Herndon soils are fairly well suited to crimson clover. The soils that are not seriously eroded are suited to bahiagrass.

Close-growing crops should be on the soil two-thirds of the time. The following are examples of suitable rotations: (1) 4 years of bahiagrass and 2 years of row crops; (2) 1 year of a small grain and annual lespedeza, 1 year of a small grain or volunteer lespedeza, and 1 year of a row crop.

These soils are easy to work. Contour tillage and complete water-disposal systems are needed. Where practicable, crops should be planted in strips. Field borders and small, irregular corners should be planted to vegetation that will provide food and cover for wildlife.

CAPABILITY UNIT 10 (IIIe–3)

Soils that have moderately plastic subsoil

The soils of this unit are widely distributed. They are moderately deep to deep, moderately well drained, and slightly to moderately eroded. The soils are—

Cataula sandy loam, eroded gently sloping phase.
Efland silt loam, eroded sloping phase.
Enon sandy loam, eroded gently sloping phase.
Enon sandy loam, sloping phase.
Helena sandy loam, sloping phase.
Mecklenburg sandy loam, sloping phase.

The surface soil is olive to brown and very friable. It is 4 to 12 inches thick. The subsoil is mottled with red, brown, and yellow. These soils are acid. They contain little organic matter and are low in fertility. They have a moderate capacity for available moisture. They are more slowly permeable than the soils in units 8 (IIIe–1) and 9 (IIIe–2).

If limed and fertilized, these soils are productive of cotton, corn, small grains, bermudagrass, dallisgrass, whiteclover, annual lespedeza, and sericea lespedeza. The Mecklenburg soil is fairly well suited to crimson clover.

Close-growing crops should be on these soils at least two-thirds of the time. Examples of suitable rotations are the following: (1) 4 years of fescue and whiteclover and 2 years of row crops; (2) 1 year of a small grain and annual lespedeza, 1 year of volunteer lespedeza or a small grain and lespedeza, and 1 year of a row crop. The rotations should be combined with a stripcropping system. Tillage should be on the contour, and a complete water-disposal system that includes terraces and grassed waterways should be maintained. Field borders and small, irregular corners should be planted to bicolor lespedeza to provide food and cover for wildlife.

CAPABILITY UNIT 11 (IIIe–5)

Shallow soil that has a thin subsoil or no subsoil

There is only one soil in this capability unit—Wilkes sandy loam, gently sloping phase. This is a shallow, well-drained soil. The surface soil is brown, very friable sandy loam and is 4 to 14 inches thick. The subsoil is yellow to strong brown. It is weakly developed and contains much partly disintegrated parent material. This soil is slowly permeable and has a low capacity for available moisture. It is acid. It is low in fertility and has a small supply of organic matter.

Some of this soil is cropped, but most of it is in forest. It is only fair cropland and pastureland. Cotton, corn, sorghum, small grains, bahiagrass, bermudagrass, crimson clover, annual lespedeza, and sericea lespedeza are suitable crops. Row crops should be grown no more than one-third of the time. Commonly used rotations are (1) 4 years of bahiagrass or sericea lespedeza and 2 years of row crops; or (2) 1 year of a small grain and annual lespedeza, 1 year of volunteer annual lespedeza, and 1 year of a row crop. If practicable, rotations should be combined with a stripcropping system. Annuals that will provide food for wildlife can be grown.

These soils need liberal liming and fertilizing. Tillage should be on the contour, and a complete water-disposal system, including terraces and grassed waterways, should be maintained.

CAPABILITY UNIT 12 (IIIw-2)

Deep, moderately permeable, somewhat poorly drained soil on first bottoms

The only soil in this unit is Chewacla silt loam. It occurs in narrow strips along the larger streams of the county. It is nearly level and is frequently flooded.

The surface soil is silt loam to sandy loam. It grades to a substratum of silty clay loam. This soil is acid. It is moderately fertile and has a moderate supply of organic matter. The capacity for available moisture is high.

If this soil is drained, it can be used to grow corn, soybeans, oats, tall fescue, dallisgrass, bermudagrass, whiteclover, and annual lespedeza. Suitable rotations include the following: (1) 2 or more years of fescue and whiteclover and 2 or more years of row crops; (2) 2 years of annual lespedeza and 2 years of row crops. The exceptionally favorable moisture relations make this soil very productive of hay and pasture plants and of vegetation that provides food for deer or quail.

Lime and fertilizer are needed. Good tilth is fairly easy to maintain. Open ditches are needed to remove surface water, and diversion ditches are needed to protect the soil from hillside runoff.

CAPABILITY UNIT 13 (IIIw-3)

Gently sloping, slowly permeable, upland soils

Colfax sandy loam is the only soil in this capability unit. Most of it is northeast of Newberry. It occupies draws, heads of draws, and saddles between heads of draws.

The surface soil is grayish brown and is 14 to 24 inches thick. The predominantly gray subsoil is firm and compact. This soil is acid. It is low in fertility and contains little organic matter. It is deep and somewhat poorly drained. It has a moderately low capacity for available moisture, but because of its position on the landscape it receives enough water for plants.

If this soil is heavily limed and fertilized, it is fairly productive of corn, grain sorghum, soybeans, oats, and annual lespedeza. It also produces fairly good stands of tall fescue, whiteclover, bermudagrass, dallisgrass, and bahiagrass. If it is artifically drained, the root zone is deep.

A moderate amount of organic matter should be added to this soil. Tillage should be on the contour. Open ditches are needed to remove surplus water. This soil is easy to work and fairly easy to keep in good tilth. Annuals should be planted to provide food for wildlife.

CAPABILITY UNIT 14 (IVe-1)

Deep, well-drained, permeable soils

The soils of this group occur throughout the county. They are—

Appling sandy loam, eroded sloping phase.
Appling sandy loam, strongly sloping phase.
Cecil sandy loam, eroded sloping phase.
Cecil sandy loam, strongly sloping phase.
Cecil clay loam, severely eroded gently sloping phase.
Georgeville silt loam, strongly sloping phase.
Georgeville silty clay loam, eroded sloping phase.
Herndon silt loam, eroded sloping phase.
Herndon silt loam, strongly sloping phase.
Hiwassee sandy loam, eroded sloping phase.
Lloyd sandy loam, strongly sloping phase.
Lloyd clay loam, severely eroded gently sloping phase.
Lloyd clay loam, severely eroded sloping phase.
Lockhart clay loam, severely eroded sloping phase.
Tirzah silt loam, eroded sloping phase.

These soils have red, yellow, grayish-brown, or dark-brown surface soils and friable to firm clay subsoils. On the eroded sloping and severely eroded gently sloping phases, most of the original surface soil and, in many places, all of the original surface soil and part of the subsoil have been lost through erosion. Shallow gullies are common.

These are acid soils that are low in fertility and contain little organic matter. They have a moderate to low capacity for available moisture.

Because of poor tilth and extreme susceptibility to further erosion, these soils are poorly suited to crops that require tillage. They are probably best suited to hay and pasture. They can be used to a limited extent for corn and small grains. Only fair yields can be expected. If row crops are grown, they should be part of a long rotation in which sericea lespedeza, kudzu, and perennial grasses predominate. Annual lespedeza and crimson clover can be grown. If properly limed and fertilized, these soils are moderately productive of tall fescue, dallisgrass, bermudagrass, and whiteclover. Bicolor lespedeza to provide food and cover for wildlife can be planted in small irregular corners, field borders, strips, patches, and small forest openings.

All tillage operations should be on the contour. Terracing is not practical. All natural draws should be in permanent vegetation.

CAPABILITY UNIT 15 (IVe-2)

Soils that have firm, moderately plastic clay subsoil

The soils of this unit are widely distributed. They are moderately deep to deep and are moderately well drained. The soils are—

Cataula clay loam, severely eroded gently sloping phase.
Enon sandy loam, eroded sloping phase.
Enon sandy loam, strongly sloping phase.
Helena sandy loam, eroded sloping phase.
Helena sandy loam, eroded strongly sloping phase.
Mecklenburg sandy loam, eroded sloping phase.
Orange silt loam, gently sloping phase.

The surface layer of these soils is red, brown, and yellow. The subsoil ranges from red to grayish brown. These are acid soils that are low in fertility and contain little organic matter. They have a rather shallow root zone. They are slowly permeable. They have a moderate water-holding capacity. The severely eroded Cataula clay loam has slow infiltration.

About 30 percent of the acreage of these soils is used for crops and pasture. The rest is in forest. On most farms, these soils are probably best used for forest, hay, or pasture. Under good management, they produce fair yields of corn, small grains, tall fescue, bermudagrass, dallisgrass, sericea lespedeza, and annual lespedeza. A suitable rotation consists of 3 years of sericea lespedeza or other close-growing crop and 1 year of a row crop. Mecklenburg sandy loam, eroded sloping phase, produces fairly good yields of crimson clover.

Field borders, irregular corners, and small forest openings can be planted to bicolor lespedeza to provide food and cover for wildlife.

Tillage should be on the contour. It is not practical to terrace these soils, but in some places it is practical to stripcrop them. The natural draws should be kept in sod or other permanent vegetation to prevent further erosion. Pastures should be rotated.

CAPABILITY UNIT 16 (IVe-4)

Shallow, poorly developed soils

The soils in this unit are well drained and slightly to moderately eroded. The soils are—

Goldston silt loam, sloping phase.
Goldston silt loam, strongly sloping phase.
Wilkes sandy loam, sloping phase.
Wilkes sandy loam, strongly sloping phase.

These soils have 4 to 18 inches of surface soil. The subsoil is thin or weakly developed, or both. In some places it contains fragments of weathered parent material.

These are acid soils that are very low in natural fertility and contain little organic matter. They have a very low capacity for available moisture. They are highly erodible.

These soils are not well suited to cultivation, chiefly because they are shallow. It is hard to till them and hard to control runoff. Rotations should be long, and close-growing crops should be grown three-quarters of the time. Although they respond well to lime and fertilizer, these soils produce only fair yields of corn, small grains, bermudagrass, dallisgrass, crimson clover, annual lespedeza, and sericea lespedeza.

All tillage should be on the contour, and, where practicable, fields should be stripcropped. Terracing to control runoff is not feasible, but all natural drainageways should be kept in permanent sod. Bicolor lespedeza grown to provide food and cover for wildlife needs to be heavily fertilized.

CAPABILITY UNIT 17 (IVw-1)

Narrow, elongated areas of "crawfish land" along small streams

Only one soil—Worsham sandy loam, gently sloping phase—is in this capability unit. It is a nearly level to gently sloping, poorly drained soil that occurs along intermittent streams, in depressions, and at the heads of small streams and draws. On many areas of it are recent deposits of material washed from the surrounding soils.

The surface soil is sandy loam to silt loam. It ranges in thickness from 8 to 30 inches. The subsoil is firm, gray clay. It is hard when dry and sticky when wet.

Partly because of its position on the landscape, this soil remains excessively wet during the first part of the growing season. It is slowly permeable. It is strongly acid and is very low in natural fertility.

Because of the excess moisture, this soil is of limited use for cultivation. It can be used as range pasture in its natural state, but it is greatly improved if drained by V-shaped ditches. Tall fescue, dallisgrass, whiteclover, and annual lespedeza do well if the soil is drained, limed, and heavily fertilized. Plants that provide food and shelter for wildlife do not grow well on this soil.

CAPABILITY UNIT 18 (Vw-2)

Elongated, excessively wet areas along small streams

This capability unit consists of one land type—Mixed alluvial land, poorly drained—which occurs in narrow areas on the first bottoms of small streams. It is very frequently flooded. The surface soil is sandy loam to silt loam and is 8 to 36 inches thick. The subsoil is variable in texture.

This land type is not suitable for cultivation. If it is drained, it is only fairly well suited to pasture. The most practical way to drain it is by open ditches and lateral drains. If drained and adequately limed and fertilized, this land type is fairly productive of tall fescue, dallisgrass, whiteclover, and annual lespedeza. Growing plants to provide food and shelter for wildlife is not practical.

CAPABILITY UNIT 19 (VIe-2)

Severely eroded and moderately steep soils that have friable subsoil

The soils in this unit are deep, well drained, and moderately permeable. They are—

Appling sandy loam, eroded strongly sloping phase.
Appling sandy loam, eroded moderately steep phase.
Cecil sandy loam, eroded strongly sloping phase.
Cecil sandy loam, moderately steep phase.
Cecil clay loam, severely eroded sloping phase.
Georgeville silty clay loam, severely eroded sloping phase.
Georgeville silty clay loam, severely eroded strongly sloping phase.
Herndon silt loam, eroded strongly sloping phase.
Hiwassee sandy loam, eroded strongly sloping phase.
Lloyd sandy loam, eroded strongly sloping phase.
Lloyd sandy loam, moderately steep phase.
Tirzah silt loam, eroded strongly sloping phase.

These soils are acid. The surface soil is sandy loam to clay. The subsoil is friable to firm clay. Most of the original surface soil and, in many places, part of the subsoil has been lost through erosion. Consequently, much of the supply of organic matter and plant nutrients has been lost. Shallow gullies are common.

Only a small amount of water infiltrates. The capacity for available moisture is moderate to low. The response to lime and fertilizer is good.

The less eroded areas are suited to grasses for permanent pasture. Heavy fertilization and careful management are needed. All these soils are suited to loblolly pine.

CAPABILITY UNIT 20 (VIe-3)

Moderately steep, shallow soil that has weak profile development

This unit is composed of only one soil—Wilkes sandy loam, moderately steep phase—which is a droughty, slowly permeable, acid soil that is slightly to moderately eroded and is very susceptible to further erosion. Shallow gullies are common.

The surface soil is gravelly sandy loam to sandy loam. It is 4 to 16 inches thick. The subsoil is thin and weakly developed. In many places it contains fragments of parent material.

Surface drainage is excessive, and the capacity for available moisture is very low. The natural fertility is very low, and the supply of organic matter is very small.

This soil is unsuited to cultivation. If heavily fertilized and limed, it produces fair yields of tall fescue, kudzu, bermudagrass, white clover, crimson clover, annual lespedeza, and sericea lespedeza. Controlling grazing will help maintain an adequate ground cover. Bicolor lespedeza can be grown in openings in the woods.

CAPABILITY UNIT 21 (VIe-4)

Soils that have moderately plastic clay subsoil

The soils in this unit are moderately deep to deep and are moderately well drained. They are—

Enon sandy loam, eroded strongly sloping phase.
Enon sandy loam, moderately steep phase.
Mecklenburg sandy loam, eroded strongly sloping phase.

These are acid soils that are low in fertility and contain little organic matter. The surface soil is sandy loam to clay loam, and the subsoil is firm, heavy, tough clay mottled with red, brown, and yellow. The moisture-holding capacity is moderate, and runoff is very rapid. Permeability is slow.

These soils are unsuitable for cultivation. If heavily fertilized and limed, they produce fair yields of white-clover, bermudagrass, sericea lespedeza, and annual lespedeza. Preparation for seeding should be done on the contour. Grazing should be controlled so that a good cover is kept on the soils at all times. Bicolor lespedeza can be grown in openings in the woods to produce food for wildlife. It needs to be liberally fertilized.

CAPABILITY UNIT 22 (VIIe-1)

Eroded or severely eroded, strongly sloping to steep soils that have red clay subsoil and friable parent material

The soils of this unit are deep, well drained, and moderately permeable. They occur in general soil areas 3, 4, and 5. They are—

Cecil sandy loam, eroded moderately steep phase.
Cecil sandy loam, eroded steep phase.
Cecil clay loam, severely eroded strongly sloping phase.
Cecil clay loam, severely eroded moderately steep phase.
Lloyd clay loam, severely eroded strongly sloping phase.
Moderately gullied land, friable materials.
Severely gullied land.

The surface soil is sandy loam to clay, and the subsoil is red to brown, friable clay. These are acid soils that are very low in fertility and contain very little organic matter. Organic matter and plant nutrients have been lost through erosion. Gullies are common. The capacity for available moisture is low. Infiltration is slow, and runoff is great.

Because of erosion, these soils are unsuited to crops. Only Cecil sandy loam, eroded moderately steep phase, and Lloyd clay loam, severely eroded strongly sloping phase, are at all suited to pasture. If limed and liberally fertilized, these two soils produce a fair to good cover of kudzu, bermudagrass, sericea lespedeza, and annual lespedeza. Most of the acreage is best suited to trees. All preparation for seeding and planting should be done on the contour. Bicolor lespedeza provides some food for wildlife if fertilized.

CAPABILITY UNIT 23 (VIIe-2)

Shallow soils that have weak profile development

The soils of this unit are shallow and well drained. They occupy the slopes near the larger streams. They are—

Wilkes sandy loam, eroded sloping phase.
Wilkes sandy loam, eroded strongly sloping phase.
Wilkes sandy loam, eroded moderately steep phase.
Wilkes sandy loam, steep phase.
Wilkes sandy loam, eroded steep phase.

The surface soil is gravelly sandy loam to sandy clay loam. In a few small eroded areas, it is clay. It is 2 to 16 inches thick. The subsoil is thin and weakly developed. In many places it consists of fragments of weathered parent material.

These are acid soils that are very low in natural fertility and contain little organic matter. They are slowly permeable and are rather droughty. The capacity for available moisture is very low.

These soils are unsuited to row crops or pasture. They are also unsuited to plants that provide food for wildlife. Pine trees should be planted in all open areas, and the existing forests should never be clear cut.

CAPABILITY UNIT 24 (VIIe-3)

Soils that have very firm subsoil or parent material

The soils of this unit are widely distributed in the northern half of the county. They commonly have shallow and deep gullies. The soils are—

Cataula clay loam, severely eroded sloping phase.
Cataula clay loam, severely eroded strongly sloping phase.
Enon sandy loam, eroded moderately steep phase.
Moderately gullied land, firm materials.

The surface soil is sandy loam to clay. Its color varies from light brown to red. The subsoil is red to brown, firm to very firm, heavy, tough, plastic clay.

These are acid soils that are very low in fertility and contain little organic matter. They are slowly permeable. Infiltration is slow, and the moisture-holding capacity is moderately low.

Erosion makes these soils unsuitable for crops or pasture. Bicolor lespedeza can be planted in openings in the woods to produce food for wildlife. It needs to be fertilized annually.

Estimated Yields

Estimates of the average yields of the principal crops under two levels of management are presented in table 5. The figures are for yields to be expected in seasons of normal weather. In columns A are yields to be expected under the management now prevailing in the county, in columns B, yields to be expected under good management; that is, under the highest level of management now believed to be feasible.

On the whole, the yields in columns B are notably higher than those in columns A. For high-value crops, however, there may be little or no difference, because they are now grown under the highest level of management believed to be feasible.

The figures in columns A are based largely on observations by members of the soil survey party, on information obtained by interviewing farmers and agricultural workers who have had experience with the soils and crops of the area, and on comparisons with yield tables for other counties in South Carolina that have similar soils.

The figures in columns B are based largely upon estimates made by men who have had experience with the soils and crops of the county. The known deficiencies of the soils were considered in judging how much yields might increase if these deficiencies were corrected within practical limits.

The requirements of good management vary according to the soils, but the following practices are considered necessary in obtaining the yields in columns B: (1) the proper choice and rotation of crops; (2) the correct use

of commercial fertilizers, lime, and manure; (3) proper tillage methods; (4) return of organic matter to the soil; (5) adequate control of water; (6) maintaining or improving workability; and (7) conserving soil material, plant nutrients, and soil moisture.

By comparing yields in columns B with those in columns A, one may gain some idea of the response a soil will make to good management. On practically all the soils of the county, more intensive management will bring increased yields.

TABLE 5.—*Estimated average acre yields under two levels of management*

[Yields in columns A are those to be expected under management now prevailing; yields in columns B are those estimated to be possible under the highest level of management now believed to be feasible. Absence of figure means that crop is not commonly grown]

Soil	Cotton		Corn		Oats		Wheat		Annual lespedeza hay		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B
	Bales	*Bales*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Cow-acre-days*[1]	*Cow-acre-days*[1]
Alamance silt loam:												
Gently sloping phase	0.3	0.6	20	40	25	50	10	20	1.0	1.7	130	260
Sloping phase	.3	.6	15	30	20	40	8	16	.8	1.5	125	250
Altavista fine sandy loam, gently sloping phase	.4	.75	16	40	30	60	14	28	.7	1.2	100	200
Appling sandy loam:												
Gently sloping phase	.5	1.0	15	35	25	60	12	25	.4	1.0	100	200
Eroded gently sloping phase	.35	.7	10	30	20	40	10	20	.3	.8	90	180
Sloping phase	.4	.8	10	30	20	40	10	20	.4	.9	90	180
Eroded sloping phase	.25	.6	8	20	15	30	7	15	.25	.6	75	150
Strongly sloping phase	.2	.4	6	15	10	20	------	------	.25	.6	75	150
Eroded strongly sloping phase	------	------	------	------	------	------	------	------	------	------	60	125
Eroded moderately steep phase	------	------	------	------	------	------	------	------	------	------	60	125
Cataula sandy loam, eroded gently sloping phase	.4	.8	10	20	20	40	9	18	.5	1.0	110	220
Cataula clay loam:												
Severely eroded gently sloping phase	.2	.4	5	10	10	20	5	10	.3	.7	70	120
Severely eroded sloping phase	------	------	------	------	------	------	------	------	.2	.5	60	90
Severely eroded strongly sloping phase	------	------	------	------	------	------	------	------	------	------	------	------
Cecil sandy loam:												
Gently sloping phase	.6	1.0	20	50	25	60	12	25	.5	1.2	125	250
Eroded gently sloping phase	.4	.8	15	40	20	40	10	20	.4	1.0	120	240
Sloping phase	.4	.8	12	40	20	40	10	20	.4	1.0	120	240
Eroded sloping phase	.3	.7	10	30	15	30	7	15	.4	1.0	110	225
Strongly sloping phase	.2	.5	8	15	10	20	------	------	.5	1.0	90	170
Eroded strongly sloping phase	------	------	------	------	------	------	------	------	------	------	80	140
Moderately steep phase	------	------	------	------	------	------	------	------	------	------	80	140
Eroded moderately steep phase	------	------	------	------	------	------	------	------	------	------	70	125
Eroded steep phase	------	------	------	------	------	------	------	------	------	------	------	------
Cecil clay loam:												
Severely eroded gently sloping phase	.2	.4	8	20	15	25	7	12	.4	.8	80	130
Severely eroded sloping phase	------	------	------	------	10	20	------	------	.3	.6	75	125
Severely eroded strongly sloping phase	------	------	------	------	------	------	------	------	------	------	60	90
Severely eroded moderately steep phase	------	------	------	------	------	------	------	------	------	------	------	------
Chewacla silt loam	------	------	20	75	25	50	------	------	1.5	2.5	150	300
Colfax sandy loam	------	------	15	30	20	40	5	10	.6	1.4	100	200
Congaree silt loam	------	------	30	75	35	80	------	------	1.0	2	200	300
Congaree fine sandy loam	------	------	30	75	35	80	------	------	1.0	2	200	300
Davidson loam, gently sloping phase	.4	.8	18	35	30	60	15	30	.6	1.4	125	250
Durham loamy sand:												
Gently sloping thick surface phase	.2	.5	7	25	15	30	5	10	.1	.3	70	140
Sloping thick surface phase	.2	.5	6	12	15	30	5	10	.1	.3	60	120
Durham sandy loam:												
Gently sloping phase	.3	.7	15	30	20	40	7	15	.2	.5	90	170
Sloping phase	.25	.6	8	16	15	30	6	12	.2	.5	80	160
Efland silt loam:												
Gently sloping phase	.3	.6	10	20	20	40	10	20	.6	1.4	110	220
Eroded sloping phase	.2	.4	8	16	17	35	8	16	.5	1.0	100	200
Enon sandy loam:												
Gently sloping phase	.4	.8	12	24	22	45	11	22	.5	1.2	120	230
Eroded gently sloping phase	.3	.6	10	20	20	40	9	18	.5	1.0	110	220
Sloping phase	.3	.6	10	20	20	40	8	16	.5	1.0	90	180
Eroded sloping phase	------	------	------	------	------	------	------	------	.3	.6	75	130
Strongly sloping phase	------	------	------	------	------	------	------	------	------	------	60	120
Eroded strongly sloping phase	------	------	------	------	------	------	------	------	------	------	40	80
Moderately steep phase	------	------	------	------	------	------	------	------	------	------	50	100
Eroded moderately steep phase	------	------	------	------	------	------	------	------	------	------	------	------

[1] Cow-acre-days is a term used to express the number of days 1 acre will support 1 animal unit (1 cow, steer, or horse; or 5 hogs; or 7 sheep or goats) without injury to the pasture.

TABLE 5.—*Estimated average acre yields under two levels of management*—Continued

Soil	Cotton		Corn		Oats		Wheat		Annual lespedeza hay		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B
	Bales	*Bales*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Cow-acre-days*[1]	*Cow-acre-days*[1]
Georgeville silt loam:												
Gently sloping phase	0.4	0.8	20	60	25	60	13	26	0.6	1.4	110	220
Sloping phase	.3	.6	10	20	20	40	12	24	.5	1.2	100	200
Strongly sloping phase									.4	1.0	80	160
Georgeville silty clay loam:												
Eroded gently sloping phase	.2	.4	8	16	12	24	8	16	.5	1.0	90	160
Eroded sloping phase									.4	.8	80	130
Severely eroded sloping phase											60	100
Severely eroded strongly sloping phase												
Goldston silt loam:												
Sloping phase									.4	.8	90	170
Strongly sloping phase									.4	.8	60	120
Helena sandy loam:												
Gently sloping phase	.3	.6	12	25	25	45	10	20	.5	1.0	100	200
Sloping phase	.2	.5	10	20	20	40	8	16	.5	1.0	90	180
Eroded sloping phase									.3	.6	75	125
Eroded strongly sloping phase											75	125
Helena loamy sand, gently sloping thick surface phase	.2	.5	7	15	15	30	5	10	.1	.3	70	140
Herndon silt loam:												
Gently sloping phase	.4	.8	8	16	25	50	10	20	.8	1.5	110	220
Eroded gently sloping phase	.3	.6	6	12	15	30	7	15	.5	1.0	100	200
Sloping phase	.3	.6	7	14	20	40	9	18	.6	1.2	100	200
Eroded sloping phase									.4	.8	75	150
Strongly sloping phase									.4	.8	75	150
Eroded strongly sloping phase											60	120
Hiwassee sandy loam:												
Gently sloping phase	.5	1.0	16	40	30	60	16	32	.7	1.2	100	175
Eroded gently sloping phase	.45	.8	14	38	25	50	14	28	.6	1.0	100	150
Sloping phase	.45	.8	12	25	25	50	14	28	.6	1.0	100	150
Eroded sloping phase	.35	.65	10	20	20	40	12	22	.6	1.0	100	150
Eroded strongly sloping phase					15	35	10	20	.6	1.0	100	150
Iredell sandy loam, gently sloping phase	.6	1.0	12	25	25	50	8	16	.7	1.5	140	275
Lloyd sandy loam:												
Gently sloping phase	.6	1.0	15	30	25	50	15	30	.5	1.2	125	250
Eroded gently sloping phase	.4	.8	12	25	20	40	12	24	.4	1.0	120	240
Sloping phase	.4	.8	12	25	20	40	12	24	.4	1.0	120	240
Eroded sloping phase	.3	.7	10	20	15	30	9	18	.4	1.0	110	225
Strongly sloping phase									.3	.6	90	170
Eroded strongly sloping phase									.2	.4	80	140
Moderately steep phase											90	160
Lloyd clay loam:												
Severely eroded gently sloping phase	.2	.4	8	20	15	25	7	12	.4	.8	90	160
Severely eroded sloping phase					10	20	5	10	.3	.7	80	150
Severely eroded strongly sloping phase											70	120
Local alluvial land, well drained			30	75	35	80	20	40	1.0	2.0	100	200
Lockhart clay loam:												
Severely eroded gently sloping phase	.2	.4	5	10	10	20	5	10	.3	.7	50	100
Severely eroded sloping phase									.2	.5	50	100
Mecklenburg sandy loam:												
Gently sloping phase	.4	.8	12	25	25	40	12	25	.5	1.2	125	250
Sloping phase	.3	.7	10	20	20	40	10	20	.5	1.0	100	200
Eroded sloping phase									.3	.6	80	140
Eroded strongly sloping phase											80	140
Mixed alluvial land:												
Well drained			20	70	30	60			1.0	2.0	200	300
Poorly drained											100	200
Moderately gullied land:												
Firm materials												
Friable materials												
Orange silt loam, gently sloping phase									.5	1.0	90	170
Severely gullied land												
Tirzah silt loam:												
Gently sloping phase	.4	.8	12	25	25	50	13	26	.6	1.4	110	220
Eroded gently sloping phase	.3	.7	10	20	20	40	10	20	.5	1.0	100	200
Sloping phase	.3	.7	10	20	20	40	10	20	.5	1.0	100	200
Eroded sloping phase	.2	.5	8	16	17	35	8	16	.4	.8	80	160
Eroded strongly sloping phase									.3	.7	70	140

TABLE 5.—*Estimated average acre yields under two levels of management*—Continued

Soil	Cotton		Corn		Oats		Wheat		Annual lespedeza hay		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B
	Bales	*Bales*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Wickham fine sandy loam:												
Gently sloping phase	0.5	1.0	16	40	30	60	18	35	0.7	1.2	100	200
Sloping phase	.45	.8	14	38	25	50	16	32	.7	1.2	100	200
Wilkes sandy loam:												
Gently sloping phase	.2	.4	7	14	10	20	6	12	.5	1.0	90	170
Sloping phase									.4	.7	80	150
Eroded sloping phase												
Strongly sloping phase									.3	.6	60	120
Eroded strongly sloping phase												
Moderately steep phase											30	60
Eroded moderately steep phase												
Steep phase												
Eroded steep phase												
Worsham sandy loam:												
Gently sloping phase									.5	1.0	90	200

Relative Suitability of Soils for Crops

Table 6 gives the relative suitability of the major agricultural soils of the county for 27 crops that are commonly grown or known to be suited to the soil and to the climate. The degree of suitability of the major soil of each series for each particular crop is expressed by index numbers. Number 1 indicates that the soil is very well suited, numbers 2 and 3, that it is progressively less well suited, and number 4, that it is not at all suited.

Soils that have index number 1 are the most desirable for the given crop. Yields are most dependable, hazards are least, and the least intensive management is required. Soils having index number 2 are suited to the crop, but they are materially limited by excess moisture, lack of moisture, a shallow root zone, low fertility, or some other factor. Index number 3 indicates that the soil cannot be expected to produce good yields of the crop without very intensive management practices that would not ordinarily be justified. Number 4 indicates that the soil should not be used for the given crop.

Pasture Management

Soils in all seven capability classes in Newberry County are used for pasture. Most of the poor permanent pastures are on soils that are moderately gullied, steep, stony, or very severely eroded. The vegetation on them consists of povertygrass, broomsedge, common lespedeza, and bulrush. Good permanent pastures are more common on gently to strongly sloping, less severely eroded soils and on soils that are moderately wet. These pastures have been seeded to bermudagrass, dallisgrass, bahiagrass, whiteclover, annual lespedeza, and sericea lespedeza for summer and fall grazing, and to tall fescue and whiteclover for winter and early spring grazing. Some soils are not suited to legumes and should be seeded to grasses alone.

The ideal pasture stand is about half grasses and half legumes. To obtain a good stand, it is necessary to prepare the soils thoroughly for seeding and to apply lime and fertilizer. The seedbed should be prepared by breaking up the soil or old sod with a disk tiller or disk harrow. Lime penetrates the soil very slowly, so it is best to work the lime into the soil before seeding. After the sod is established, the need for lime can be met by topdressing.

Phosphate is essential for legumes, and it is beneficial to grass if applied with nitrogen. Phosphate on pastures is not lost through leaching, and only a small part is used by the plants. Small amounts applied each year or larger amounts applied every 3 or 4 years are effective.

Both grasses and legumes need potassium. Moderate amounts of potash give good response, especially when applied to sandy soils.

Nitrogen is most effective when applied frequently in small amounts. It is more beneficial to grasses alone than to mixtures of grasses and legumes.

Control of grazing is essential for high production of pasture plants. If whiteclover is included in a mixed sod, frequent grazing is necessary to keep grasses from crowding out the clover.

The best time to renovate rundown or unproductive pastures is early in summer. The old sod should be broken up with a heavy disk harrow or subsoiler and pulverized with a lighter disk harrow. The old sod acts as a mulch and protects the soil from erosion until a new stand is established. Lime and fertilizer should be applied, and a suitable mixture of grasses and legumes should be seeded. Pastures that have not been previously renovated need more phosphate than those that have.

If areas to be renovated are not too strongly sloping, they can be seeded to annuals one year and seeded to permanent grasses and legumes the next year. The old sod is then in better shape for seedbed preparation for the perennial seeding.

Pastures need to be mowed two or three times a season to control weeds and woody plants. The residue of these plants acts as an organic mulch and protects the soil from accelerated erosion. It adds some organic matter and increases the activities of micro-organisms. It also protects the soil from the direct rays of the sun, thus decreasing loss of moisture by evaporation.

Mixtures of small grains and legumes or of ryegrass and crimson clover are planted annually for grazing. Annual plantings of sudangrass or millet supplement summer grazing.

On many dairy or beef farms, a mixture of small grains, ryegrass, and crimson clover is sown annually for winter grazing. These plants provide grazing until late in spring, and they protect the soil from erosion until they die or are plowed under.

Woodland [4]

Approximately 68 percent of the total area of Newberry County was in forest at the time this soil survey was made.

The original forest consisted of loblolly pine, shortleaf pine, oak, hickory, walnut, and poplar trees. It was practically free of brushy undergrowth. Undoubtedly birch, willow, beech, ash, poplar, and sweetgum trees were common along the streams. Fruit-bearing shrubs and muscadine vines were probably plentiful. The present native forests consist of loblolly pines and some shortleaf pines and hardwoods. Most of the second-growth hardwoods are scrubby and of little or no value for timber. In places there is a very thick undergrowth of dogwood, redbud, wild plum, sassafras, sumac, and scrub oak trees and a profusion of briers.

The early settlers destroyed most of the timber they cut to clear their farms. They cultivated their cleared fields until yields began to decline, then cleared new land or abandoned the settlement. The cycle of clearing, cultivating destructively, and abandoning was repeated until, by 1850, only 100,000 acres of forest remained and more than 130,000 acres was practically wasteland (*9*).

The significant effect of these cycles was the conversion of most of the original forests to pine stands. There is a fairly definite succession of vegetation on land abandoned after cultivation. First crabgrass, lespedeza, and wild asters invade, then broomsedge and scattered sumac, persimmon, or sassafras bushes. These are generally followed by loblolly pines. After the loblolly pines are well established and the ground cover has improved, an understory of hardwoods begins to develop. Pine stands established in fields abandoned during the Reconstruction period are being invaded today by hardwoods. Cutting the pine trees for timber encourages the growth of the hardwoods, but restocking some areas with pine has somewhat offset the conversion of other areas to hardwoods (*6*).

Of the 401,920 acres in Newberry County, the United States Forest Service, the largest landowner, has 54,951 acres, or approximately 13.5 percent of the total land area. Pulp and paper industries own 36,474 acres, or about 9 percent of the total land area. Other wood-using industries or corporations own 2,710 acres, or less than 1 percent. The rest of the land is privately owned, chiefly by farmers.

The forests vary widely in composition. There are a few pure stands of loblolly pine and shortleaf pine. Mixed pine-hardwoods stands are common. Longleaf pine grows with other pines and with hardwoods or in a few small pure stands in the southeastern part of the county. Slash pine has been planted beyond its natural range, but in limited acreage. The major kinds of forests are the following:

Loblolly pine forests.—These forests consist of stands in which at least 25 percent of the dominant and codominant trees are conifers. Loblolly pines predominate.

These are the most important forests in the county. The stands are on the stream terraces and throughout the uplands. Single trees or groups of trees grow on the first bottom. The trees attain maximum growth on well-drained alluvial soils.

On the upland sites the loblolly pines are associated with oak, hickory, yellow-poplar, sweetgum (redgum), persimmon, redcedar, dogwood, black cherry, blackgum, holly, shortleaf pine, and longleaf pine trees. On the bottom-land sites they grow with ash, yellow-poplar, sweetgum, cottonwood, red maple, hackberry, sycamore, black walnut, persimmon, redcedar, black cherry, beech, elm, birch, blackgum, holly, and oak trees.

Shortleaf pine forests.—These forests consist of stands in which at least 25 percent of the dominant and codominant trees are conifers. Shortleaf pines predominate.

The shortleaf pine forests occur mainly in the east-central part of Newberry County. Shortleaf pines grow on drier sites than loblolly pines. They also grow in mixed stands because they can flourish under severe competition. By coppicing, young stands of shortleaf pines have survived fires that eliminated loblolly pines. Nevertheless, shortleaf pines are no longer planted, because they are severely damaged by littleleaf disease. Shortleaf stands killed by littleleaf disease are generally succeeded by undesirable hardwoods.

Associated with shortleaf pines on upland sites are oak, hickory, yellow-poplar, sweetgum (redgum), persimmon, redcedar, dogwood, black cherry, blackgum, holly, loblolly pine, and longleaf pine trees.

Upland hardwood forests.—In forests of this type, at least 75 percent of the dominant and codominant trees are southern red oak, scarlet oak, white oak, post oak, black oak, hickory, yellow-poplar, or other upland hardwood trees.

This type of forest is distributed throughout the county and varies widely in composition. On many tracts indiscriminate cutting of pine from mixed stands has resulted in pure stands of hardwoods. Most of the hardwoods have little commercial value. In some places, loblolly pine is associated with this type.

Lowland hardwood forests.—In these forests, at least 75 percent of the dominant and codominant trees are lowland hardwoods—sweetgum, blackgum, tupelo-gum, white oak, water oak, red maple, and ash. The stands vary in composition, depending on drainage. Stands on the well-drained first bottoms include yellow-poplar, sweetgum, cottonwood, ash, oak, and sycamore trees. Those on the poorly drained first bottoms include willow, birch, blackgum, beech, water oak, willow oak, tupelo-gum, and red maple trees.

Tree requirements and soil suitability

Pines generally thrive on soils that supply too little potassium, phosphoric acid, and nitrogen for most of the hardwood trees, especially oak, poplar, walnut, beech, and hickory. Shortleaf pine seedlings do not require so much moisture to become established as loblolly seedlings.

[4] GEORGE E. SMITH, JR., woodland conservationist, SCS, assisted with this section.

TABLE 6.—*Relative suitability of the major*

[Rating number 1 means soil is well suited; 2 means fairly

Soil	Row crops					Small grains				Orchards	
	Corn	Cotton	Grain sorghum	Peppers	Turkish tobacco	Barley	Oats	Rye	Wheat	Peaches	Grapes
Alamance silt loam, gently sloping phase	2	3	2	4	4	3	3	2	2	4	4
Altavista fine sandy loam, gently sloping phase	2	3	2	3	4	3	2	2	2	4	4
Appling sandy loam, gently sloping phase	2	2	2	2	2	2	2	1	2	2	2
Cataula sandy loam, eroded gently sloping phase	2	3	2	2	2	3	2	2	2	3	3
Cataula clay loam, severely eroded gently sloping phase	3	4	3	3	2	4	3	3	3	4	4
Cecil sandy loam, gently sloping phase	2	1	1	1	2	2	2	1	1	1	1
Cecil clay loam, severely eroded sloping phase	3	2	2	2	2	3	2	3	2	2	2
Chewacla silt loam	2	4	2	4	4	4	3	3	4	4	4
Colfax sandy loam	2	4	3	4	4	3	2	2	3	4	4
Congaree silt loam (and fine sandy loam)	1	4	1	4	4	2	1	1	2	4	4
Davidson loam, gently sloping phase	2	3	1	1	3	1	1	1	1	1	1
Durham sandy loam, gently sloping phase	3	3	2	3	2	3	2	1	3	3	2
Durham loamy sand, gently sloping thick surface phase	3	3	3	4	4	3	2	1	3	4	4
Efland silt loam, gently sloping phase	3	3	2	4	4	2	2	2	2	4	4
Enon sandy loam, gently sloping phase	3	3	2	4	4	3	2	2	3	4	4
Georgeville silt loam, gently sloping phase	2	2	2	3	3	2	2	2	2	2	3
Georgeville silty clay loam, eroded gently sloping phase	3	3	2	4	4	3	3	3	3	3	4
Goldston silt loam, sloping phase	4	4	3	4	4	4	3	3	4	4	4
Helena sandy loam, gently sloping phase	3	3	2	4	3	3	2	2	3	4	3
Helena loamy sand, gently sloping thick surface phase	3	3	3	4	4	3	2	1	3	4	4
Herndon silt loam, gently sloping phase	3	2	2	3	3	3	2	2	2	2	3
Hiwassee sandy loam, gently sloping phase	2	2	1	1	3	1	1	1	1	3	3
Iredell sandy loam, gently sloping phase	3	1	2	4	4	2	1	1	2	4	4
Lloyd sandy loam, gently sloping phase	2	2	1	2	3	1	1	1	1	1	1
Lloyd clay loam, severely eroded gently sloping phase	3	2	2	2	3	2	2	2	2	1	1
Local alluvial land, well drained	1	3	1	2	4	2	1	1	2	4	4
Lockhart clay loam, severely eroded gently sloping phase	4	3	3	4	3	4	3	3	4	3	3
Mecklenburg sandy loam, gently sloping phase	3	2	2	3	3	2	2	2	2	4	4
Mixed alluvial land, well drained	1	4	2	4	4	3	2	2	3	4	4
Mixed alluvial land, poorly drained	4	4	4	4	4	4	4	4	4	4	4
Orange silt loam, gently sloping phase	4	4	4	4	4	4	3	3	4	4	4
Tirzah silt loam, gently sloping phase	2	3	2	2	3	2	1	1	1	2	2
Wickham fine sandy loam, gently sloping phase	2	1	1	1	2	2	2	1	1	3	2
Wilkes sandy loam, strongly sloping phase	3	3	3	4	3	4	3	3	4	4	3
Worsham sandy loam, gently sloping phase	4	4	4	4	4	4	3	3	4	4	4

Shortleaf pines generally predominate on the drier sites and loblolly pines on the moister sites. On wet sites loblolly seedlings can withstand considerable competition from brush and grasses and heavy litter is not so much of a deterrent to sprouting as it is on drier sites (*10*).

The more desirable hardwoods generally require more moisture and more fertile soil than do pines. Valuable hardwoods normally grow on stream bottom lands and in depressions. Yellow-poplars are common on moist, permeable soils. Red oaks and white oaks grow well on well-drained and more permeable soils. Red oaks will grow on drier soil than white oaks. Black walnut and black locust trees need fertile, permeable soils.

There are notable differences among the soils of Newberry County in their capacity to produce trees and in the management required. The comparative productivity of different soils for loblolly and shortleaf pine is shown in table 7. In this table, soils similar in the characteristics most important in affecting tree production and woodland conservation practices are grouped together. These characteristics are texture, consistence, aeration, natural fertility, the thickness of the A horizon, the thickness of the root zone, and the stability of the water table.

Woodland conservation

The tremendous expansion of the pulp and paper industry and of markets for other forest products during the past two decades has stimulated interest in woodland conservation (*2*). The wood-using industries maintain staffs of technical foresters, who assist landowners in

agricultural soils for specified crops

well suited; 3 means less well suited; 4 means not suited]

Grasses						Legumes									
Bahia	Bermuda	Dallis	Tall fescue	Rescue	Rye	Alfalfa	Bicolor lespedeza	Crimson clover	Cowpeas	Kudzu	Lespedeza	Sericea lespedeza	Soybeans	Vetch	White clover
1	2	1	2	2	2	4	3	2	2	4	1	3	2	2	2
1	2	2	2	2	2	4	3	2	2	4	2	3	2	2	2
1	1	3	3	2	2	3	1	2	1	1	2	1	2	2	3
2	2	2	2	2	2	3	2	2	2	3	2	2	2	2	3
2	2	4	4	3	3	3	3	3	3	3	3	2	3	2	4
1	1	2	2	1	1	2	1	1	1	1	2	1	2	1	2
2	2	3	2	2	2	2	2	2	2	1	2	2	3	3	3
2	1	1	1	1	1	4	4	3	4	4	1	4	2	2	1
1	2	2	2	2	2	4	3	3	3	4	1	4	3	3	2
1	1	1	1	1	1	4	2	1	1	4	1	2	1	1	1
1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	1
1	1	3	3	2	2	4	2	2	2	2	3	2	2	2	4
1	2	4	4	3	2	4	3	4	3	1	3	2	3	2	4
2	2	1	2	2	2	3	2	2	2	4	1	3	3	2	1
2	2	2	2	2	2	4	3	2	2	4	2	3	3	2	2
2	2	2	2	2	2	3	2	2	2	3	2	2	2	2	2
3	3	3	3	3	3	3	2	3	3	3	3	2	3	2	3
3	4	4	4	3	3	4	3	3	3	4	3	3	4	3	4
2	2	3	3	2	2	4	3	2	2	4	2	2	3	2	2
1	2	4	4	3	2	4	3	4	3	3	3	3	3	2	4
2	2	2	2	2	2	3	1	2	2	4	2	2	2	2	2
1	1	2	1	1	1	2	1	1	1	1	1	1	2	1	1
2	2	1	2	2	2	4	3	2	2	4	1	3	2	2	1
1	1	2	1	1	1	2	1	1	1	1	1	1	2	1	1
1	2	2	1	2	2	2	1	1	2	1	1	1	2	2	1
1	1	1	1	1	1	3	1	1	1	2	1	1	1	1	1
2	3	4	4	3	3	4	3	3	3	2	3	2	4	3	4
2	2	1	2	2	2	3	2	2	2	4	1	2	2	2	1
1	1	1	1	2	2	4	3	3	2	4	1	3	2	2	1
2	4	3	3	4	4	4	4	4	4	4	4	4	4	4	3
3	3	2	4	3	3	4	4	3	4	4	3	4	4	3	3
1	1	1	1	1	1	2	1	1	1	2	1	1	2	1	1
1	1	2	2	1	1	2	1	1	1	1	2	1	2	1	2
2	3	3	3	3	3	4	3	3	3	3	2	3	3	2	3
2	2	2	2	3	3	4	4	4	4	4	3	4	4	4	3

applying conservation practices. Assistance is also available from private foresters and public agencies. The Agriculture Conservation Program and the Soil Bank Program also encourage woodland conservation.

During the 1956–57 planting season, 1,273,760 trees were planted in the county. This is a considerable increase over the 462,875 trees planted in the 1952–53 season. There are 27 certified tree farms in the county. They occupy a total of 34,432 acres.

An inventory of the forest resources of South Carolina is currently being conducted by Federal and State agencies and the wood-using industries. An inventory completed in 1948 showed a 26.1 percent increase in forested acreage in the Piedmont (*3*) but did not give data for Newberry County specifically.

FIRE CONTROL

According to the reports of the South Carolina State Commission of Forestry, Newberry County had, during the fiscal year 1956–57, only 14 forest fires. A total of 33.5 acres was burned over, an average of only 2.3 acres per fire.

The Commission maintains a statewide fire-control organization. Local operations are directed by a unit ranger, who is assisted by two unit wardens, two unit towermen, and a unit tractor operator. Lookout towers, located at visibility vantage points, are supplied with radios or telephones. One medium crawler tractor equipped with a fireplow is assigned to Newberry County and an adjoining county. Daily measurements are made at the fire-danger measurement station.

TABLE 7.—*Soil characteristics*

Soil type	Dominant slopes	Erosion [1]	Forest site class [2]	
			Loblolly pine	Shortleaf pine
Chewacla silt loam	Nearly level	None	100	([2])
Congaree fine sandy loam	Nearly level	None	100	([3])
Congaree silt loam	Nearly level	None	100	([3])
Local alluvial land, well drained	Nearly level	None	100	([3])
Mixed alluvial land, well drained	Nearly level	None	100	([3])
Altavista fine sandy loam	Gently sloping	Slight to moderate	80	70
Appling sandy loam	Gently sloping to strongly sloping	Slight to moderate	80	70
Cecil sandy loam	Gently sloping to steep	Slight to moderate	80	70
Durham sandy loam	Gently sloping to sloping	Slight	80	70
Georgeville silt loam	Gently sloping to strongly sloping	Slight to moderate	80	70
Hiwassee sandy loam	Gently sloping to strongly sloping	Slight to moderate	80	70
Lloyd sandy loam	Gently sloping to moderately steep	Slight to moderate	80	70
Mecklenburg sandy loam	Gently sloping to strongly sloping	Slight to moderate	80	70
Tirzah silt loam	Gently sloping to strongly sloping	Slight to moderate	80	70
Wickham fine sandy loam	Gently sloping to sloping	Slight to moderate	80	70
Colfax sandy loam	Gently sloping	Slight	80	70
Mixed alluvial land, poorly drained	Nearly level	None	(Varied)	([3])
Worsham sandy loam	Gently sloping	None to slight	60	50
Goldston silt loam	Sloping to strongly sloping	Slight	60	50
Wilkes sandy loam	Gently sloping to moderately steep	Slight	60	50
	Gently sloping to steep	Moderate	50	40
	Sloping to steep	Slight	40	[4] 40
Iredell sandy loam	Gently sloping	Slight to moderate	40	40
Orange silt loam	Gently sloping	Slight to moderate	40	40
Cecil sandy loam	Gently sloping to steep	Moderate to severe	70–80	60–70
Georgeville silt loam	Gently sloping to strongly sloping	Moderate to severe	70–80	60–70
Hiwassee sandy loam	Gently sloping to strongly sloping	Moderate to severe	70–80	60–70
Lloyd sandy loam	Gently sloping to moderately steep	Moderate to severe	70–80	60–70
Tirzah silt loam	Gently sloping to strongly sloping	Moderate to severe	70–80	60–70
Cecil clay loam	Gently sloping to steep	Severe	60	50
Georgeville silty clay loam	Gently sloping to strongly sloping	Severe	60	50
Lloyd clay loam	Gently sloping to moderately steep	Severe	60	50
Lockhart clay loam	Gently sloping to sloping	Severe	60	50
Mecklenburg sandy loam	Sloping to strongly sloping	Moderate to severe	60	50
Durham loamy sand	Gently sloping to sloping	Slight	80	70
Helena loamy sand	Gently sloping	Slight	70	60
Cataula sandy loam	Gently sloping	Moderate	70	60
Enon sandy loam	Gently sloping to moderately steep	Slight	70	60
Helena sandy loam	Gently sloping to sloping	Slight	70	60
Cataula clay loam	Gently sloping to strongly sloping	Moderate to severe	60	50
Enon sandy loam	Gently sloping to moderately steep	Moderate to severe	60	50
Helena sandy loam	Gently sloping to strongly sloping	Moderate to severe	60	50

See footnotes at end of table.

significant to forestry

Soil characteristics	Hazards	Important native species
Nearly level to very gently sloping; very permeable; well drained to moderately well drained; friable, thick root zone.	Vegetative cover may restrict establishment of pine and necessitate site preparation. Poor accessibility during wet periods.	Loblolly pine, slash pine, yellow-poplar, sweetgum (redgum), ash, sycamore, cottonwood, black walnut.
Nearly level to steep; permeable; well drained to moderately well drained; thick root zone; moderately thick original surface soil.	Steeper slopes limit access and restrict logging; littleleaf disease present, but not so severe as on poorer sites; competition by undesirable trees may necessitate control measures or site preparation to establish pines.	Loblolly pine, shortleaf pine, slash pine, black walnut, wild black cherry, red oak, white oak, redcedar, dogwood.
Nearly level to gently sloping; permeable mixed alluvium and slowly permeable Colfax and Worsham; poorly drained; shallow root zone except for water-loving trees; thick surface soil.	Excessive moisture, unfavorable to pines; poor accessibility in wet periods; Worsham and Colfax droughty in dry periods.	Loblolly pine, shortleaf pine, sweetgum (redgum), blackgum, sycamore, birch, red maple, cottonwood, ash, willow.
Gently sloping to steep; slowly permeable; well drained to excessively drained; shallow root zone; moderately thick surface soil.	Shallow; weakly developed B horizon; loblolly die out in some severely eroded areas; littleleaf disease may be severe in shortleaf pine; long, steep slopes restrict access and logging and increase runoff; limited moisture supply.	Loblolly pine, shortleaf pine, slash pine, redcedar.
Gently sloping; very slowly permeable; somewhat poorly drained to moderately well drained; shallow root zone; fluctuates from wet to very dry; thick surface soil.	Fluctuating moisture; very plastic, very slowly permeable subsoil; shallow root zone; littleleaf disease of shortleaf pine sometimes severe.	Loblolly pine, shortleaf pine, redcedar, sweetgum (redgum).
Gently sloping to steep; permeable; well drained; thick root zone; thin surface soil.	Steeper slopes restrict logging and limit access; gully erosion a severe hazard in indiscriminate logging; little infiltration of surface; severely eroded areas in lower site class; littleleaf disease attacks shortleaf pine; competition by undesirable species may necessitate control measures or site preparation to establish pines.	Loblolly pine, shortleaf pine, slash pine, white oak, red oak, redcedar.
Gently sloping to steep; permeable; well drained to somewhat excessively drained; thick root zone; none of original surface soil left.	Steep slopes restrict logging and limit access; littleleaf disease may be severe in shortleaf pine.	Loblolly pine, shortleaf pine, slash pine, redcedar.
Gently sloping to sloping; permeable; well drained; thick to moderately thick root zone; thick surface soil.	Thick loamy sand surface soil limits moisture-holding capacity, prevents regeneration, and causes failure of plantings in dry periods; plastic subsoil in Helena loamy sand.	Loblolly pine, shortleaf pine, longleaf pine, slash pine, dogwood, redcedar, white oak, red oak.
Gently sloping to moderately steep; slowly permeable; somewhat poorly drained to moderately well drained; water table fluctuates from high to low; thin root zone; moderately thick surface soil.	Firm, plastic subsoil limits root zone; fluctuating moisture supply that restricts tree growth; limited access; undesirable woody growth that invades pine stands; littleleaf disease that may severely attack shortleaf pine.	Loblolly pine, shortleaf pine, slash pine, redcedar, sweetgum (redgum).
Gently sloping to steep; slowly permeable; somewhat poorly drained to moderately well drained; thin root zone; water supply fluctuates, soils wet to very dry; thin surface soil.	Littleleaf disease that may attack shortleaf pine severely; loblolly pine subject to die-out on Cataula clay loam and Enon sandy loam; fluctuating moisture supply that restricts tree growth, limits access, causes failure of plantings, and prevents regeneration; undesirable woody plants that compete with desirable species.	Loblolly pine, shortleaf pine, slash pine, redcedar, sweetgum (redgum).

TABLE 7.—*Soil characteristics*

Soil type	Dominant slopes	Erosion [1]	Forest site class [2]	
			Loblolly pine	Shortleaf pine
Cataula clay loam	Gently sloping to strongly sloping	Severe	50	40
Alamance silt loam	Gently sloping to sloping	Slight	80	70
Herndon silt loam	Gently sloping to strongly sloping	Slight	70	60
Efland silt loam	Sloping	Moderate	70	60
Herndon silt loam	Gently sloping to strongly sloping	Moderate	70	60
Moderately gullied land, friable materials.	Gently sloping to steep	Gullied	[4] 40	[4] 40
Moderately gullied land, firm materials	Gently sloping to steep	Gullied	[4] 40	[4] 40
Severely gullied land	Gently sloping to steep	Gullied	[4] 40	[4] 40

[1] "None" in this column indicates that the soil is subject to deposition of alluvium.
[2] Forest site class refers to site index, that is, height at 50 years; class interval range is 10 points; site index information based on preliminary field studies in South Carolina and subject to revision.

The United States Forest Service cooperates with the South Carolina State Commission of Forestry in protecting certain private lands within the boundaries of the national forests, in exchange for protection of certain national forest lands. The Forest Service operates a lookout tower on a part-time basis.

One wood-using industry has two medium tractors equipped with fireplows. Some individuals have hand tools and other equipment to be used for additional protection.

DISEASE

Rust diseases caused by the genus Fusiformis are the most prevalent of the diseases that affect loblolly and slash pines in Newberry County. The cankers cause deformation and losses in stem volume. Canker diseases also attack hardwoods and cause the stems to decay. There is no practical control measure. If practicable, infected trees should be removed. Heart rot is common in residual stands. Many of the cull stands are the result of these diseases and of the destructive practice of logging only the high-grade trees.

Littleleaf disease of shortleaf pine, which also affects loblolly pine to a lesser extent, is most prevalent where aeration and internal drainage are poor. Loblolly pine is most commonly affected in areas where the disease is particularly severe in shortleaf pine. Because they are not so susceptible to littleleaf disease, loblolly pine and other pines should be favored over shortleaf pine in cutting and reforestation (*1*).

In some small areas of heavy, poorly aerated, and poorly drained soils, loblolly pine dies out.

Southern-pine beetles, ips beetles, and turpentine beetles are bark beetles that attack sporadically. The attacks are generally confined to small areas. Although there has been an apparent increase in the number of beetles, there have been no epidemics in recent years. No widespread control measures have been necessary—only proper cutting and other good management.

Pine-tip moths deform loblolly pine and prevent their growth to normal height. After a few years, the moths disappear.

HARVESTING PRACTICES (*3*)

Shortleaf and loblolly pine are followed in their natural succession, by hardwoods. On the fine-textured soils characteristic of the Piedmont, the single-stem selection method of harvesting favors the succession of hardwoods, but clear cutting in patches or strips of limited size, or cutting everything except selected seed trees, favors the reproduction of pines. Even with these methods of harvesting, release cuttings may be needed to assure the reestablishment of pines.

Forest yields

Pine woodlands have not been managed long enough to determine the amount of wood per acre that can be grown and harvested in managed stands. Yields of unmanaged stands of loblolly pine are shown in table 8, which can be used as a guide until data on managed stands are available. The figures in table 8 were based on those in table 33 and tables 59 to 63 of Volume, Yield, and Stand Tables for Second-Growth Pines (*14*) (now out of print). A site index of 75 is average for Newberry County.

significant to forestry—Continued

Soil characteristics	Hazards	Important native species
Gently sloping to strongly sloping; very slowly permeable; moderately well drained; very thin root zone; none of original surface soil remaining.	Loblolly pine subject to die-out; shortleaf pine subject to littleleaf disease; limited access during wet periods.	Loblolly pine, shortleaf pine.
Gently sloping to strongly sloping; slowly permeable; well drained; thick root zone; moderately thick surface soil.	Stronger slopes restrict logging and limit access; competition by low-grade hardwoods may necessitate control measures and site preparation to establish pines.	Loblolly pine, shortleaf pine, longleaf pine, redcedar, dogwood, upland willow oak.
Gently sloping to strongly sloping; slowly permeable; well drained to moderately well drained; thick root zone; thin surface soil.	Stronger slopes restrict logging and limit access; competition by undesirable hardwoods may necessitate control measures and site preparation to establish pines.	Loblolly pine, shortleaf pine, longleaf pine, redcedar.
Gently sloping to steep; variable permeability; excessively drained; widely variable root zone; none of original surface soil left.	Die-out of loblolly pine and littleleaf disease of shortleaf pine; gullies may limit access and may necessitate site preparation to establish vegetation; topsoil between some gullies; not generally suited to commercial sawtimber.	Loblolly pine, shortleaf pine, Virginia pine.

[3] Not generally grown on these soils.
[4] Less than 40.

The figures in table 8 apply to loblolly pine stands of average quality, in which dominant trees attain the height of 75 feet in 50 years. Reasonably well-stocked stands, if carefully managed, should produce 400 to 500 board-feet of sawtimber or 1 to 1½ cords of pulpwood an acre a year (*4*).

TABLE 8.—*Number, size, basal area, and volume per acre of dominant and codominant loblolly pines in fully stocked unmanaged stands at various ages* (*7*)

[Site index of 75]

Age of trees	Height	Diameter at breast height	Trees	Basal area [1]	Merchantable volume [2]	
					Pulpwood	Sawtimber
Years	*Feet*	*Inches*	*Number*	*Square feet*	*Cords*	*Board-feet*
20	40	5. 8	470	86	16	2, 000
30	56	8. 2	290	106	26	8, 400
40	68	10. 2	210	119	35	14, 700
50	75	11. 6	170	125	43	19, 900
60	80	12. 8	145	130	49	23, 300
70	84	13. 8	130	135	53	26, 500
80	86	14. 6	120	140	57	28, 700

[1] Total area per acre of cross sections of trees at breast height. Basal area computed by factors issued by U.S. Forest Service, Region 8.
[2] Either pulpwood or sawlogs—not both. Utilization assumed to a fixed top diameter of 3 inches for pulpwood (stacked cords, including bark) or 5 inches for sawlogs (International log rule with ¼-inch kerf).

Conservation Engineering [5]

Soil and water conservation engineering in Newberry County includes the construction of terraces and farm ponds and the establishment of drainage and irrigation systems (table 9).

Terraces

Terraces can be constructed on slopes of 2 to 10 percent. The amount of space between terraces depends on the length and grade of the slope. The gradient of the terraces themselves toward the drainageways depends on the texture of the soil. For instance, terraces on sandy soils, which erode readily, should have gentler grades than terraces on clay soils. Variable grades are generally needed to keep the space between the terraces the same at different points. Uneven spacing makes cultivation difficult. All draws or depressions should be kept in grass or other suitable perennials.

Some soils in the county do not need to be protected by terraces. Others, for various reasons, are not suitable for terracing. The Goldston and Wilkes soils, for example, are so shallow that adequate terraces are difficult to construct. Although the Iredell soils can be terraced, their plastic subsoil makes construction difficult. The size and shape of the areas of the Worsham soils make terracing impractical. Because of the heavy, plastic subsoil, the Orange soil is unsuitable. It is not practical to terrace slopes of more than 10 percent or severely eroded soils.

[5] Prepared with the assistance of JAMES L. AULL, conservation engineer, and C. C. ALLEN, agricultural engineer.

TABLE 9.—*Suitability of and need of soils for field terraces, suitability for farm ponds, suitability and need for irriga and major soil features affecting these practices*

Soil series	Suitability for terraces [1]	Suitability for farm ponds		Suitability for irrigation
		Sites	Fill	
Alamance	Good. Establish water-tolerant plants in waterways.	Poor. Weathered rock (Carolina slates) at depths of 3 to 6 feet.	Poor	Poor. Very slow infiltration.
Altavista	Good. Establish perennial sod in waterways.	Good. Exposed parent material endangers storage and stability.	Good	Good
Appling	Good. Establish deep-rooted perennials in waterways.	Good. Exposed parent material endangers storage and stability.	Good	Good
Cataula	Good. Establish perennials in waterways.	Fair	Poor	Fair. Infiltration is slow in eroded phases.
Cecil	Good. Stabilize gullies that are more than 3 feet deep before using them as waterways.	Good. Exposed parent material endangers storage and stability.	Good	Fair. Infiltration is slow in severely eroded phases.
Chewacla	None needed	Not suitable	Excellent	Fair. Infiltration is slow in severely eroded phases.
Colfax	Fair if adjoining soils are terraced. Establish water-tolerant plants in waterways.	Poor	Good	Fair, but irrigate only if adjoining soils are irrigated. Occurs in small areas.
Congaree	None needed	Not suitable	Poor	Fair. Infiltration is slow.
Davidson	Good. Establish perennials in waterways.	Good. Exposed parent material endangers storage and stability.	Good	Fair. Infiltration is slow.
Durham	Good. Establish deep-rooted perennials in waterways.	Good. Exposed parent material endangers storage and stability.	Loamy sand fair; sandy loam good.	Good
Efland	Good. Establish perennials in waterways.	Good. Semiplastic subsoil hard to work. Exposed parent material endangers storage stability.	Good	Fair. Infiltration is slow.
Enon	Good. Establish perennials in waterways.	Good. Rock in some sites and in borrow areas. Semiplastic subsoil hard to work.	Good	Fair. Shallow root zone; low water-storage capacity.
Georgeville	Good. Establish perennials in waterways.	Good. Exposed parent material endangers storage and stability.	Good	Poor. Very slow infiltration.
Goldston	Poor. Shallow soil over bedrock (Carolina slates).	Not suitable. Shallow to bedrock.	Poor	Poor. Low water-storage capacity.

Helena	Good. Loamy sand: establish deep-rooted perennials in broad, shallow waterways. Sandy loam: establish water-tolerant plants in waterways and keep terraces short.	Good. Exposed parent materia endangers storage and stability. Rock in some borrow areas. Plastic subsoil of the sandy loam is likely to be difficult to work.	Poor	Poor. Loamy sand has very low water-holding capacity and requires frequent irrigation. Sandy loam is shallow over plastic subsoil and has low available water-storage capacity.
Herndon	Good. Establish perennials in waterways.	Good. Exposed parent material endangers storage and stability.	Good	Poor. Very slow infiltration.
Hiwassee	Good. Establish deep-rooted perennials in waterways.	Fair	Good	Poor. Very slow infiltration.
Iredell	Good. Establish perennials in waterways. Plastic subsoil makes construction difficult.	Poor. Plastic subsoil hard to work. Shallow to parent material. Exposed parent material endangers storage stability.	Poor	Poor. Very slow infiltration; high water-holding capacity.
Lloyd	Good. Establish deep-rooted perennials in waterways.	Good. Exposed parent material endangers storage and stability.	Good	Fair. Slow infiltration in severely eroded phases.
Local alluvial land, well drained.	None needed. Establish perennials in waterways.	Not suitable	Fair	Good, but occurs in small areas. Irrigate only with adjoining soils.
Lockhart	Fair if terraces are shallow, broad, and of low gradient. Establish deep-rooted perennials in waterways.	Fair. Exposed parent material endangers storage and stability.	Poor	Poor. Very slow infiltration.
Mecklenburg	Good. Establish perennials in waterways.	Good. Semiplastic subsoil hard to work. Exposed parent material endangers storage and stability.	Good	Fair. Slow infiltration
Mixed alluvial land, poorly drained.	None needed	Fair. High water table; cutoff required to keep flowing water out of pond.	Not suitable. Obtain fill from other areas.	None needed
Mixed alluvial land, well drained.	None needed	Fair. Moderately high water table; cutoff required to keep flowing water out of pond.	Not suitable. Obtain fill from other areas.	Good, but occurs in small areas along streams. Irrigate only with adjoining soils.
Orange	Poor. Shallow soil over bedrock (Carolina slates).	Poor. Plastic subsoil hard to work; Carolina slates at shallow depths.	Poor	Poor. Very slow infiltration.
Tirzah	Good. Establish deep-rooted perennials in waterways.	Good. Exposed parent material endangers storage and stability.	Good	Poor. Very slow infiltration.
Wickham	Good. Establish deep-rooted perennials in waterways.	Fair. Exposed parent material endangers storage and stability.	Good	Good
Wilkes	Poor. Shallow soil	Poor. Porous material or rock at shallow depths.	Poor	Poor. Low water-storage capacity.
Worsham	Poor. Small, elongated areas generally not suitable. Establish water-tolerant plants in waterways. Divert water to a protected waterway if feasible.	Fair	Poor	Poor. Can be irrigated with adjacent areas.

[1] Severely eroded soils and soils of more than 10 percent slope should not be terraced.

The soils in Newberry County that are suitable for terracing are the Altavista, Appling, Cataula, Cecil, Colfax, Davidson, Durham, Efland, Enon, Georgeville, Helena (short terraces on the sandy loam), Herndon, Hiwassee, Iredell, Lloyd, Lockhart (shallow, broad, and only slightly sloping terraces), Mecklenburg, Tirzah, and Wickham.

Farm Ponds

Newberry County is well supplied with sites suitable for farm ponds. More than 500 ponds have been built. They are a major source of water for livestock and of water used to irrigate crops. Some are stocked with fish.

Some of the problems in constructing a farm pond are (1) selecting a site where a maximum pond area can be obtained at a minimum cost, (2) preventing seepage under or through the dam by proper design and construction and the use of suitable fill material, (3) providing emergency spillways to carry off storm water, and (4) sodding the dam and the spillways to check erosion.

Irrigation

Irrigation is fairly new to Newberry County. Irrigation of specialized crops is now being tried by a few farmers. The sprinkler method, which is the method best suited to local conditions, is generally used.

The soils best suited to irrigation are the Altavista, Appling, Durham, and Wickham.

Local alluvial land, well drained, and Mixed alluvial land, well drained, and the Colfax soils are suitable for irrigation but they occur in such small areas that irrigation is not practical unless the adjoining areas are irrigated. The following soils are not well suited to irrigation because they have a slow or very slow rate of infiltration: Alamance, Chewacla, Congaree, Davidson, Efland, Georgeville, Herndon, Hiwassee, Iredell, Lockhart, Orange, and Tirzah; also, the eroded soils of the Cataula series and the severely eroded soils of the Cecil and Lloyd series.

It is not practical to irrigate the Enon, Goldston, Helena, and Wilkes soils, because they have shallow surface soil and low moisture-holding capacity.

Drainage

Drainage is not a major problem in Newberry County. Most soils of the uplands and terraces are well drained to moderately well drained. Less well drained soils occur on first bottoms and in small drainageways.

Shallow drains with slight gradient are needed to remove excess water from slopes of 1 percent or less on the following soils: Alamance, Altavista, Chewacla, Colfax, Congaree, Helena (sandy loams), Iredell, and Orange. The alluvial land types also need to be drained.

Artificial drainage is not generally needed on the other soils of the county. In some places ditches are needed to keep water that runs off hillsides from accumulating on the adjoining bottom lands.

Genesis, Morphology, and Classification of Soils

Genesis is the mode of origin of the soil. The term refers particularly to the processes responsible for the development of the solum from the unconsolidated parent material (*13*). Through the action of these processes minerals disintegrate, new minerals and new chemical compounds form, organic matter accumulates and decomposes, and materials in suspension and solution move downward in the soil and are partly removed by drainage water.

Morphology is the physical constitution of the soil, including the texture, structure, consistence, color, and chemical properties of the various horizons that make up the soil profile. The morphology of any given soil is an end product of soil genesis.

What kind of soil develops depends on the interaction of (1) parent materials, (2) climate, (3) topography, (4) plant and animal life, and (5) time. These combined genetic factors affect soil formation and give the soil distinct horizons.

Parent material.—Parent material is the unconsolidated mass from which a soil develops. it is largely responsible for the chemical and mineralogical composition of soils. In Newberry County the parent materials of most of the soils are residual—that is, they have formed in place through the weathering of the underlying hard rock. The kinds of rocks from which the parent materials of different soils were derived are listed in the legend of the General Soil Map at the back of this report. According to a map published by the Geological Society of America, the rocks of Newberry County are chiefly (1) volcanic rocks of the Carolina slate belt, (2) gneiss and schist, mostly mica-gneiss and mica-schist, (3) granite rocks—massive or weakly foliated.

The soils along the larger streams in the county formed from alluvium—materials that had been transported and deposited by streams. Much of this alluvium originated from the rocks of the nearby uplands, but some of it came from the granites and metamorphosed rocks of the mountains to the north. The soils on the first bottoms are weakly developed and still subject to deposition, but those on the old, high terraces and benches have been in place long enough to have developed horizons. Along drainageways throughout the uplands there are narrow strips of local alluvium that has been modified hardly at all by soil-forming processes.

Climate.—Climate as a genetic factor affects the physical, chemical, and biological relationships in the soil primarily through the influence of precipitation and of temperature. Water dissolves minerals, supports biological activity, and transports mineral and organic residues through the soil profile. The amount of water that actually percolates through the soil over a broad area is dependent mainly upon rainfall, relative humidity, and the length of the frost-free period; at a given point, the amount of downward percolation is also affected by physiographic position and by soil permeability. Temperature influences the kinds and growth of organisms and the speed of physical and chemical reactions in soils. Microclimatic variations cause soils to differ in certain characteristics from those developed under the prevailing macroclimate.

Under the present-day climate in Newberry County, the soils are moist and subject to leaching much of the time from November 1 through June 30; they are moderately dry to dry much of the time from July 1 through October 31; they are frozen for only 1 to 4 days at a time. Freezing and thawing in this county have little effect on weathering and soil-forming processes. The average temperature is above 75° F. from about June 1 through September 30 (table 1).

Topography.—Topography is largely determined by the underlying bedrock formations, the geologic history of the general region, and the effects of dissection by rivers and streams. It influences soil formation through its effects on moisture relations, erosion, temperature, and plant cover. Its influence is modified by the other four factors of soil formation.

The slopes in Newberry County range from 0 to 35 percent. In upland areas soils, such as those of the Cecil, Appling, Enon, and Davidson series, have thick, well-expressed profiles where they occur on slopes of less than about 15 percent. In areas with slopes of 15 to 35 percent, the effects of topography tended to cause geological removal of the soils almost as fast as they were formed; as a result, many of the soils on the steeper slopes, such as those of the Wilkes and Goldston series, have thin, weakly-expressed profiles with some characteristics of Lithosols. Except along upland brook and stream channels, most of the alluvial soils are level or nearly level.

Plant and animal life.—Micro-organisms are indispensable in soil development. Bacteria, fungi, and other micro-organisms aid in weathering rock and decomposing organic matter. The larger plants serve to alter the soil microclimate, to furnish organic matter, and to transfer elements from the subsoil to the surface soil.

The kinds and numbers of plants and animals that live on and in the soil are determined in large part by the climate and, to varying degrees, by parent material, relief, and age of the soil.

Not much is known of the fungi and micro-organisms in the soils of this county except that they are largely confined to the uppermost few inches. The activity of earthworms and other small invertebrates is greatest in the A_1 horizon, where they carry on a slow but continual cycle of soil mixing. Mixing of soil material by rodents does not appear to have been of much consequence in Newberry County.

Except on the bottom lands, the native vegetation was chiefly oak, hickory, loblolly pine, and shortleaf pine. On the bottom lands the trees were lowland hardwoods, chiefly yellow-poplar, sweetgum, cottonwood, ash, oak, and sycamore. On the poorly drained areas of the bottom lands, the trees were chiefly willow, birch, blackgum, beech, and water-tolerant oak.

Time.—The length of time required for soil development depends largely on the other factors of soil formation. Less time is generally required for a soil to develop in humid, warm regions with luxuriant vegetation than in dry or cold regions with scanty vegetation; also, less time is required if the parent material is coarse textured than if it is fine textured, other things being equal.

The age of the soils varies considerably. Generally speaking, the older soils show a greater degree of horizon differentiation. For example, on the smoother parts of the uplands and on the older stream terraces, the soils have developed to maturity. On the stronger slopes, however, geologic erosion has removed soil material so rapidly that the depth to bedrock in some places has been kept shallow, and there has been less development. On the first bottoms and in areas of local alluvium, the soil materials have been in place too short a time to allow for mature development.

Morphology and Classification of Soils by Great Soil Groups

A great soil group is a group of soils having common internal soil characteristics. Soils within the central concept of the Red-Yellow Podzolic great soil group predominate in Newberry County. They occupy about 70 percent of the county. Weakly developed Red-Yellow Podzolic soils that have some characteristics of Lithosols occupy about 2 percent. Less than 1 percent is occupied by Low-Humic Gley soils; about 3.5 percent, by Red-Yellow Podzolic soils that have some characteristics of Low-Humic Gley soils; less than 1 percent, by Reddish-Brown Lateritic soils; about 4.5 percent, by Red-Yellow Podzolic soils that have characteristics of Reddish-Brown Lateritic soils; and about 9 percent, by Alluvial soils.

Table 10 lists the soil series by great soil groups and gives some of the distinguishing characteristics of each series.

Red-Yellow Podzolic soils

This great soil group consists of well-developed, well-drained, acid soils formed under forest vegetation in warm-temperate humid to tropical humid climates. The soils have thin organic (A_0) and organic-mineral (A_1) horizons, over a light-colored, bleached, (A_2) horizon, over a red, yellowish-red, or yellow and more clayey (B_2) horizon. The parent materials are all more or less siliceous. Coarse reticulate streaks or mottles of red, yellow, brown, and light gray are characteristic of the deep horizons (*12*).

In general, the soils of this group have a low cation exchange capacity and a low base saturation (commonly 20 to 35 percent); kaolinite is the dominant clay mineral, and the subsoil has moderate to strong subangular blocky structure and colors of medium to high chroma.

All of the Red-Yellow Podzolic soils in Newberry County have a dark-colored but thin A_1 horizon, in which the organic-matter content ranges from about 2.5 percent to 7 percent, and a well-defined A_2 horizon, which has a weak granular or crumb structure and is no more than 2 percent organic matter. These soils are medium acid to strongly acid in the A_2 horizon. They have a moderate to strong, medium, subangular blocky structure in the B_2 horizon, which contains more clay than the A_2 horizon. The B_2 horizon is medium acid to strongly acid. The C horizon is mottled or reticulated red, yellow, and gray. The structure is less strong in the C horizon than in the B_2 horizon, and the proportion of clay is generally less. Red-Yellow Podzolic soils like those common in Newberry County are also found in the Piedmont section of Virginia and other nearby states. Unpublished data obtained by analysis of the Virginia soils show the cation exchange capacity of the B_2 horizon to range from about 2.2 to about 14.6 milliequivalents per 100 grams of soil.

TABLE 10.—*Soil series classified by great soil groups and some distinguishing characteristics of the soil series*

Great soil group and series	Color and texture of soils that are not essentially effected by erosion	Drainage	Parent material	Predominant slope range
				Percent
Red-Yellow Podzolic soils:				
Alamance	Light brownish-gray coarse silt loam over brownish-yellow, friable silty clay loam.	Moderately good.	Carolina slates (slate, tuff, and rhyolite and andesite flows).	2 to 10.
Appling	Grayish-brown to olive-yellow sandy loam over strong-brown to yellowish-red sandy clay loam to clay.	Good	Residuum from acid rocks (granite, gneiss, and schist).	2 to 15+.
Cataula	Light yellowish-brown sandy loam over red, firm clay.	Good	Mica-schist	2 to 15.
Cecil	Yellowish-brown sandy loam over red friable to firm clay loam to clay.	Good	Residuum from acid rocks (granite, gneiss, and schist).	2 to 25+.
Durham	Grayish-brown to yellow sandy loam over yellowish-brown friable to firm sandy clay loam to clay.	Good	Granite	2 to 10.
Georgeville	Dark-brown silt loam over dark-red friable silty clay.	Good	Carolina slates (slate, tuff, and rhyolite and andesite flows).	2 to 25.
Herndon	Strong-brown silt loam over yellowish-red, friable silty clay.	Good	Same	2 to 15.
Lockhart	Reddish-brown clay loam over red, friable clay (severely eroded phase).	Good	Porphyritic granite or pegmatite, and feldspathic granite.	2 to 10.
Wickham	Reddish-brown fine sandy loam over reddish-brown clay loam.	Good	Alluvium from granite, gneiss, schist, and Carolina slates.	2 to 10.
Red-Yellow Podzolic soils that have some characteristics of Reddish-Brown Lateritic soils:				
Lloyd	Dark-brown sandy loam over dark-red, friable to firm clay.	Good	Residuum from acid and basic igneous and metamorphic rocks.	2 to 25.
Tirzah	Yellowish-brown silt loam over red, friable silty clay.	Good	Carolina slates with dikes of basic rock.	2 to 15.
Red-Yellow Podzolic soils that have some characteristics of Low-Humic Gley soils:				
Altavista	Pale-brown fine sandy loam over light olive-brown, mottled with gray, friable to firm clay.	Moderately good.	Alluvium from granite, gneiss, schist, and Carolina slates.	2 to 10.
Planosols:				
Helena	Pale-olive sandy loam over pale-olive, grading to mottled yellowish-brown, firm clay.	Moderately good.	Acid and basic rocks (aplitic granite with dikes of quartz diorite).	2 to 10.
Iredell	Dark-brown, grading to olive, sandy loam over strong-brown, mottled with yellow, plastic clay.	Somewhat poor to moderately good.	Residuum from dark-colored basic rocks (diorite, gabbro, and hornblende schist).	2 to 6.
Orange	Dark grayish-brown silt loam over dark brown, mottled with light brownish-gray, plastic clay.	Somewhat poor	Basic rocks similar to Carolina slates.	2 to 6.
Planosols that have some characteristics of Red-Yellow Podzolic soils:				
Colfax	Grayish-brown to olive sandy loam over mottled strong-brown and gray plastic clay.	Somewhat poor	Granite	2 to 6.
Enon	Brown sandy loam over strong-brown very firm clay.	Moderately good.	Acid and basic rocks	2 to 15.
Reddish-Brown Lateritic soils:				
Davidson	Dusky-red loam over dark reddish-brown, friable to firm clay loam to clay.	Good	Residuum from dark colored basic rock (diorite, gabbro, and hornblende schist).	2 to 6.
Efland	Dark-brown silt loam over yellowish-red, mottled with yellowish brown, firm clay.	Moderately good.	Residuum from Carolina slates that include basic rocks.	2 to 10.
Hiwassee	Dark reddish-brown sandy loam over dark-red, friable clay loam to clay.	Good	Alluvium chiefly from dark colored basic rocks (diorite, gabbro, and hornblende schist).	2 to 15.

TABLE 10.—*Soil series classified by great soil groups and some distinguishing characteristics of the soil series*—Con.

Great soil group and series	Color and texture of soils that are not essentially effected by erosion	Drainage	Parent material	Predominant slope range
Reddish-Brown Lateritic soils that have some characteristics of Red-Yellow Podzolic soils:				*Percent*
Mecklenburg	Dark reddish-brown sandy loam over dark-red, mottled with gray, friable clay.	Moderately good.	Basic rocks (hornblende schist, gabbro, and diorite).	2 to 15.
Low-Humic Gley soils:				
Worsham	Black to dark-gray sandy loam over grayish-brown to gray, friable to firm sandy clay to clay.	Poor	Granite, gneiss, and schist	2 to 6.
Alluvial soils:				
Chewacla	Very dark grayish-brown to dark-brown silt loam over mottled, brown and gray silty clay loam.	Somewhat poor to moderately good.	Alluvium from granite, gneiss, schist, and Carolina slates.	0 to 2.
Congaree	Dark grayish-brown silt loam grading to dark brown over dark-brown silty clay loam; mottled below 30 inches.	Good	Same	0 to 2.
Lithosols:				
Goldston	Grayish-brown silt loam over light brownish-gray silty clay loam; mottled red and brown, weathered slate at shallow depth.	Good to excessive.	Carolina slates	2 to 25+.
Wilkes	Brown sandy loam over strong-brown friable to firm sandy clay loam; shallow to bedrock.	Excessive	Residuum from granite, gneiss, schist, and basic rocks.	2 to 25+.

The Cecil and Georgeville series are good examples of Red-Yellow Podzolic soils that have a thick, red or dark-red (Munsell hue of 2.5YR, and chroma of 6 or higher) subsoil that has moderate to strong, medium, subangular blocky structure. The Georgeville soils are finer textured than the Cecil, especially in the A and C horizons.

The Appling and Herndon soils have similar characteristics in the A and B horizons. They differ from the Cecil and Georgeville series chiefly in having a less reddish B_2 horizon and a shallower depth to mottled or reticulated material. The color of the B_2 horizon is within the range of the 7.5YR and 5YR hues, whereas that of the Cecil and Georgeville series is a 2.5YR hue. The Appling and Herndon series differ from each other in texture, especially in the A and C horizons.

The Durham and Alamance series are distinguished from the Cecil and Georgeville series by their predominantly yellower B_2 horizon and by prominent mottling at a depth of about 24 inches. Generally the B_2 horizon is not so fine textured as that of the Cecil and Georgeville series, although the C horizon may be as fine textured. The thick-surface phases of the Durham series have a notably thicker and sandier A horizon than the Alamance soils. They have a weakly developed B_2 horizon.

The Lockhart series is distinguished from the Cecil series in having an abundance of feldspar crystals throughout the entire profile. Generally the B_2 horizon is more friable than that of the Cecil series, and the depth to bedrock is less.

The Cataula series is similar to the Cecil series in the A and B_2 horizons, except that the depth to the C horizon is much less. The B_2 horizon is firmer. Fine mica flakes are common throughout the C horizon and in the underlying residuum of mica schist. Percolation is slower than in the Cecil soils.

The well-drained Wickham series, in drainage and degree of development, is comparable to the Cecil series. The A_2 horizon is browner than that of the Cecil series, and the B_2 horizon is less reddish colored and less clayey. It is not so deep to mottled or reticulated material. It has developed in old alluvium that originated chiefly from granite, gneiss, schist, and other igneous and metamorphic rocks.

Intergrades to Reddish-Brown Lateritic soils.—The Lloyd and Tirzah series are Red-Yellow Podzolic soils that have some characteristics of Reddish-Brown Lateritic soils. The A_2 horizon of the Lloyd soils is sandier and lighter colored than that of the Davidson soils. The B_2 horizon is generally not so dark a red as the B_2 horizon of the Davidson soils. The A_2 horizon is darker colored than that of the Cecil soils, and the B_2 horizon is generally darker colored. The Lloyd soils are well drained. They are deeper to mottled or reticulated material than the Mecklenburg soils.

The Tirzah series is associated with the soils that have developed from Carolina slates. It is intermediate between the Georgeville series of the Red-Yellow Podzolic great soil group and the Davidson series of the Reddish-Brown Lateritic great soil group.

Intergrade to Low-Humic Gley soils.—The Altavista soils have a gleyed layer but no claypan, which indicates that they are intergrades to the Low-Humic Gley great soil group rather than true Red-Yellow Podzolic soils. In some places the C horizon is brittle and has characteristics of a fragipan.

The Altavista soils are moderately well drained. They have formed on old alluvium. They are associated with the nearly level Wickham soils.

Planosols

The Planosol great soil group consists of soils with eluviated surface horizons underlain by B horizons more strongly illuviated, cemented, or compacted than those of associated normal soils. Planosols develop on nearly flat uplands under grass or forest in a humid or subhumid climate. They are distinguished by a well-defined layer of clay or cemented material that occurs at various depths (*13*). The Planosols in Newberry County are the Helena, Iredell, and Orange soils.

The Helena and Orange series have a light-colored, fairly coarse textured A_2 horizon and a mottled, plastic clay B_2 horizon. In the Orange soils, the boundary between the A_2 and B_2 horizons is clear. In the Helena series, there is a B_1 horizon. The Orange soils are somewhat poorly drained and are mottled at depths of 13 to 18 inches. The Helena soils are moderately well drained and are mottled at somewhat greater depth than the Orange soils.

The Iredell soils have a brown A_2 horizon. Their B_2 horizon is more plastic than that of the Helena or Orange soils. The drainage is somewhat poor to moderately good. The parent material was derived from basic rocks. Unpublished data indicate that the cation exchange capacity is probably higher (about 25 milliequivalents per 100 grams of soil) and base saturation is higher (40 to 57 percent) than in Red-Yellow Podzolic soils in a similar textural range. The data indicate that kaolinite is the dominant clay mineral, but there is some montmorillonite.

Intergrades to Red-Yellow Podzolic soils.—The Colfax and Enon series are Planosols that have some characteristics of Red-Yellow Podzolic soils. The Enon soils have a plastic clay B horizon that has distinct clay skins and a moderate to strong, fine, subangular blocky structure. Percolation through the Enon soils is slow. The Colfax soils have a light-colored, fairly coarse textured A_2 horizon and a mottled, plastic B_2 horizon, separated by a B_1 horizon. The drainage is somewhat poor. Mottling begins at depths of 13 to 18 inches.

Reddish-Brown Lateritic soils

This great soil group consists of well-drained, acid soils formed under forest vegetation in climates ranging from warm-temperate humid to tropical humid. The soils have dark reddish-brown granular surface soil; a red, friable clayey B_2 horizon; and red or reticulately mottled "lateritic" parent materials. They lack the distinct A_2 horizon characteristic of the Red-Yellow Podzolic soils, and commonly have a B_2 horizon that is darker red in color. The B_2 horizon commonly has a moderate to strong subangular blocky structure with clay skins on some ped faces and channels.

The Davidson and Hiwassee soils in Newberry County may differ from the central concept (ortho) of the Reddish-Brown Lateritic soils in that the subsoil is a little less friable than is typical of the group; the clays in the subsoil are composed mostly of kaolinite and vermiculate and are not significantly different from those in the Red-Yellow Podzolic soils.

The Davidson and Hiwassee soils have a dark-colored A horizon, a thick, dark-red, rather friable B horizon, and a reticulated C horizon. The Davidson soils have developed in residuum derived from gabbro, diorite, and hornblende schist. The Hiwassee soils have developed from old alluvium, which apparently originated largely from the same basic rocks. Small quartz pebbles are common in the Hiwassee soils. In reaction, both of these series are about the same as the Red-Yellow Podzolic soils in the county.

The Efland soils have a dark-colored A horizon and a yellowish-red B horizon. The C horizon and the lower part of the B horizon are somewhat gleyed.

Intergrades to Red-Yellow Podzolic soils.—The Mecklenburg series are Reddish-Brown Lateritic soils that have some characteristics of Red-Yellow Podzolic soils. They resemble the Efland soils in color and texture.

Low-Humic Gley soils

Low-Humic Gley soils are imperfectly and poorly drained. They have a very thin surface horizon that is moderately high in organic matter and overlies mottled gray and brown gleylike mineral horizons that have a low degree of textural differentiation (*12*).

The Worsham series is the only Low-Humic Gley soil in the county. Its acreage is less than 1 percent of the county. Except for having a darker colored A horizon, it resembles the typical Low-Humic Gley soils.

Alluvial soils

This group consists of soils that have developed in transported and fairly recently deposited material (alluvium). The original material has been modified little or not at all by soil-forming processes (*13*).

The Congaree and Chewacla series are classed as Alluvial soils. These soils are sometimes flooded. In areas of very recent deposition there is no horizon differentiation. In areas of older deposition there is slight horizon differentiation.

The Congaree soils are friable and have a distinctly brown (10YR 3/3 to 7.5YR 4/4) color. The Chewacla soils have a slightly darker colored surface soil than the Congaree soils. They are noticeably mottled below a depth of about 15 inches. Generally the material below a depth of 25 inches is finer textured than that of the Congaree series. In some areas of the finer textured Congaree soils there is some horizon differentiation in texture and structure.

Lithosols

Lithosols are soils that have very weakly expressed soil horizons and consist of freshly and imperfectly weathered materials shallow over bedrock. They occupy positions of rolling to steep relief where geologic erosion is relatively rapid. As a result, soil-forming processes have not acted long enough on the materials to produce well defined soil properties (*13*).

The Wilkes and Goldston soils are the Lithosols mapped in this county. They have some characteristics of Red-Yellow Podzolic soils in that they may have weakly expressed B horizons.

The Wilkes soils have sola that are 2 to 15 inches thick. The A horizon is sandy loam, and the B horizon, if present, is strong-brown (7.5YR 5/8), yellow, brown, red, or

mottled, sandy clay loam. The parent material is strong-brown (7.5YR 5/8) sandy clay loam, mottled with olive yellow (5Y 6/6). It contains quartz pebbles and fragments of disintegrated granite and is underlain by weathered granite rock.

In the Goldston soils, the A horizon is silt loam and the B horizon, if present, is light brownish-gray (2.5Y 6/2) silty clay loam mottled with olive yellow (5Y 6/8). The parent material consists of weathered slate fragments mixed with small amounts of silt loam and silty clay loam. It was derived from the underlying Carolina slate bedrock.

Soil Survey Methods and Definitions

The scientist who makes a soil survey examines soils in the field, classifies the soils in accordance with facts that he observes, and maps their boundaries on an aerial photograph or other map.

FIELD STUDY.—The soil surveyor bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern, but are located according to the lay of the land. Usually they are not more than a quarter of a mile apart and sometimes they are much closer together. In most soils each boring or hole reveals several distinct layers, called horizons, which collectively are known as the soil profile. Each layer is studied to see how it differs from others in the profile and to learn the things about this soil that influence its capacity to support plant growth.

Color is usually related to the amount of organic matter. Streaks and spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

Texture, or the amount of sand, silt, and clay, is determined by the way the soil feels when rubbed between the fingers and is later checked by laboratory analysis. Texture determines how well the soil retains moisture, plant nutrients, and fertilizer and whether it is easy or difficult to cultivate.

Structure, which is the way the individual soil particles are arranged in larger grains and the amount of pore space between grains, gives us clues to the ease or difficulty with which the soil is penetrated by plant roots and by moisture.

Consistence, or the tendency of the soil to crumble or to stick together, indicates whether it is easy or difficult to keep the soil open and porous under cultivation.

Other characteristics observed in the course of the field study and considered in classifying the soil include the following: The depth of the soil over bedrock or compact layers; the presence of gravel or stones in amounts that will interfere with cultivation; the steepness and pattern of slopes; the degree of erosion; the nature of the underlying material; and the acidity or alkalinity of the soil as measured by chemical tests.

CLASSIFICATION.—On the basis of the characteristics observed by the survey team or determined by laboratory tests, soils are classified into series, types, and phases.

Soil series.—Two or more soils that differ in surface texture, but are otherwise similar in kind, thickness, and arrangement of soil layers, are normally designated as a soil series. In a given area, however, it frequently happens that a soil series is represented by only one soil type. Each series is named for a place near which it was first mapped.

Soil type.—The soil type is a subdivision of the soil series based on the texture of the surface soil.

Soil phase.—Some soil types are divided into two or more phases. Slope variations, number of rock outcrops, degree of erosion, depth of soil over the substratum, or natural drainage, are examples of characteristics that suggest dividing a soil type into phases.

The soil phase, or the soil type if it has not been subdivided, is the unit shown on the soil map. It is the unit that has the narrowest range of characteristics. Use and management practices therefore can be specified more easily than for soil series or yet broader groups that contain more variation.

Miscellaneous land types.—Areas that have little true soil are not classified into types and series, but are identified by descriptive names. Examples in Newberry County are Severely gullied land; Moderately gullied land, friable materials; and Moderately gullied land, firm materials.

Literature Cited

(1) CAMPBELL, W. A., and COPELAND, OTIS L.
1954. LITTLELEAF DISEASE OF SHORTLEAF AND LOBLOLLY PINES. U.S. Dept. Agr. Cir. 940, 41 pp., illus.

(2) CHRISTOPHER, JOE F., and NELSON, MARTHA E.
1957. 1956 PULPWOOD PRODUCTION IN THE SOUTH. U.S. Dept. Agr. Forest Serv. Forest Survey Release 80, August 1957.

(3) CUTTING PRACTICES COMMITTEE, APPALACHIAN SECTION, SOCIETY OF AMERICAN FORESTERS.
1945. CUTTING PRACTICES FOR THE CAROLINAS. Jour. Forestry, 43: 861–870.

(4) GRANO, CHARLES X.
1956. GROWING LOBLOLLY AND SHORTLEAF PINE IN THE MID-SOUTH. U.S. Dept. Agr. Farmers' Bul. No. 2102, 25 pp., illus. Washington, D.C.

(5) KING, PHILIP B.
1954. GEOLOGIC MAP OF PARTS OF NORTH CAROLINA AND SOUTH CAROLINA AND ADJACENT STATES—A GEOLOGIC SECTION ACROSS THE SOUTHERN APPALACHIANS: AN ANTHOLOGY. Geol. Soc. Amer. and Associated Soc., 1955 annual meeting.

(6) LARSON, ROBERT W.
1951. THE TIMBER SUPPLY OUTLOOK IN SOUTH CAROLINA. U.S. Dept. Agr. Forest Serv. Forest Resource Rpt. No. 3, 66 pp., illus.

(7) LOTTI, THOMAS.
1956. GROWING LOBLOLLY PINE IN THE SOUTH ATLANTIC STATES. U.S. Dept. Agr. Farmers' Bul. No. 2097, 33 pp., illus.

(8) NELSON DIRECTORY COMPANY.
1952. DIRECTORY OF NEWBERRY, SOUTH CAROLINA. Charleston, S.C.

(9) O'NEALL, JOHN BELTON, and CHAPMAN, JOHN A.
1892. ANNALS OF NEWBERRY. 816 pp., illus. Newberry, S.C.

(10) PATTERSON, A. E., and WEDDELL, D. J.
1943. MANAGEMENT OF GEORGIA'S WOODLANDS. George Foster Peabody School of Forestry, Univ. Ga. Bul. No. 1, 34 pp., illus. Athens.

(11) SUMMER, GEORGE LELAND.
1950. NEWBERRY COUNTY, SOUTH CAROLINA—HISTORICAL AND GENEALOGICAL [PROCESSED]. 469 pp., illus. Newberry.

(12) THORP, JAMES, AND SMITH, GUY D.
1949. HIGHER CATEGORIES OF SOIL CLASSIFICATION: ORDER, SUBORDER, AND GREAT SOIL GROUPS. Soil Sci. 67: 117–126.
(13) UNITED STATES DEPARTMENT OF AGRICULTURE.
1938. SOILS AND MEN. U.S. Dept. Agr. Ybk., 1232 pp., illus.
(14) ———
1929. VOLUME, YIELD, AND STAND TABLES FOR SECOND-GROWTH SOUTHERN PINES. U.S. Dept. Agr. Misc. Pub. 50, 202 pp.
(15) WALLACE, DAVID DUNCAN.
1934. THE HISTORY OF SOUTH CAROLINA. Amer. Hist. Soc., Inc., v. 3, 579 pp., illus. New York.

Glossary

Alluvial soils. Soils developing from transported and recently (in geological time) deposited material (alluvium) that has been modified little or not at all by soil-forming processes.

Alluvium. Sediments deposited on land by streams.

Bedrock. The solid rock underlying soils.

Colluvium. Mixed deposits of soil material and rock fragments near the base of steep slopes. The deposits have accumulated through soil creep, slides, and local wash.

Consistence. The combination of properties of soil material that determines its resistance to crushing and its ability to be molded or changed in shape. Consistence depends mainly on the forces of attraction between soil particles. It is described by such words as loose, friable, firm, soft, plastic, and sticky.

Erosion. The wearing away of the land surface by detachment and transport of soil and rock materials through the action of moving water, wind, or other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds in adequate amounts and in proper balance for the growth of specified plants when other growth factors are favorable.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Gleyed. Mottled with yellow and gray as a result of intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the soil surface, that has distinct characteristics produced by soil-forming processes.

Horizon A. The upper horizon of the soil mass, from which material has been removed by percolating water; the eluviated part of the solum; the surface soil; the horizon of maximum biological activity.

Horizon B. The horizon to which materials have been added by percolating water; the illuviated part of the solum; the subsoil.

Horizon C. The horizon of partly weathered material underlying the B horizon; the substratum; normally the parent material.

Local alluvium. Recently deposited material washed from adjacent slopes; physical rather than chemical weathering has been dominant.

Mottled. Irregularly marked with spots of color. A common cause of mottling is imperfect or impeded drainage.

Permeable. Easily penetrated by water and air.

Phase, soil. The subdivision of a soil type having variations in characteristics not significant to the classification of the soil but significant to its use and management. Examples are differences in slope, stoniness, thickness, and erosion (Cecil sandy loam, *eroded steep phase*).

Productivity. The capability of a soil to produce specified plants under a given system of management.

Profile, soil. A vertical section of the soil that extends through all its horizons and into the parent material.

Reaction. The degree of acidity of the soil mass expressed in pH values or in words, as follows:

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5–5.0
Strongly acid	5.1–5.5
Medium acid	5.6–6.0
Slightly acid	6.1–6.5
Neutral	6.6–7.3
Mildly alkaline	7.4–7.8
Moderately alkaline	7.9–8.4
Strongly alkaline	8.5–9.0
Very strongly alkaline	9.1 and higher

Series, soil. A group of soils that have horizons similar in characteristics and arrangement in the profile, except for the texture of the surface soil, and that have formed from a particular type of parent material.

Soil. (1) The natural medium for the growth of land plants. (2) A dynamic natural body on the surface of the earth in which plants grow; composed of mineral and organic materials and living forms. (3) The collection of natural bodies that occupies parts of the earth's surface that support plants.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. Some of the terms used to describe soil structure are prismatic, columnar, blocky, subangular blocky, platy, crumb, and granular.

Subsoil. The B horizon of a soil that has a distinct profile; commonly, that part of the profile below plow depth.

Substratum. Any layer underlying the B horizon, or subsoil.

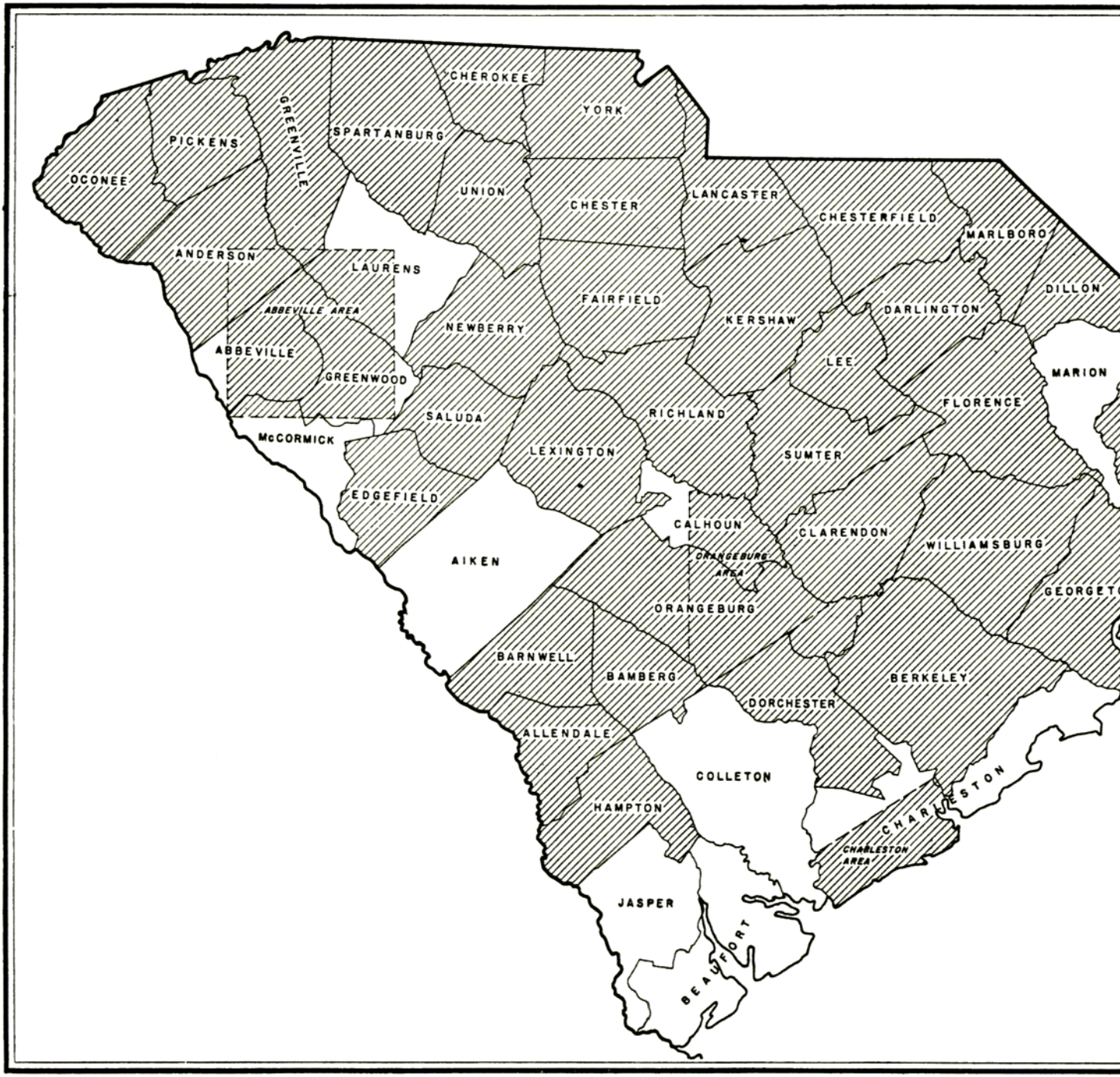
Surface soil. The soil ordinarily moved in tillage, or, in undisturbed soil, the soil to depths of 5 to 8 inches.

Terrace (geological). A nearly flat or undulating plain, commonly rather narrow and usually having a steep front, bordering a river, a lake, or the sea. Although many old terraces have become more or less hilly because of dissection by streams, they are still regarded as terraces.

Texture, soil. The relative proportions of the various size groups of individual soil grains in a mass of soil. Specifically, it refers to the proportions of sand, silt, and clay.

Type. A subdivision of the soil series based on the texture of the surface soil.

Upland. High ground, higher than the flood plain and low stream terraces.



Areas surveyed in South Carolina shown by shading.

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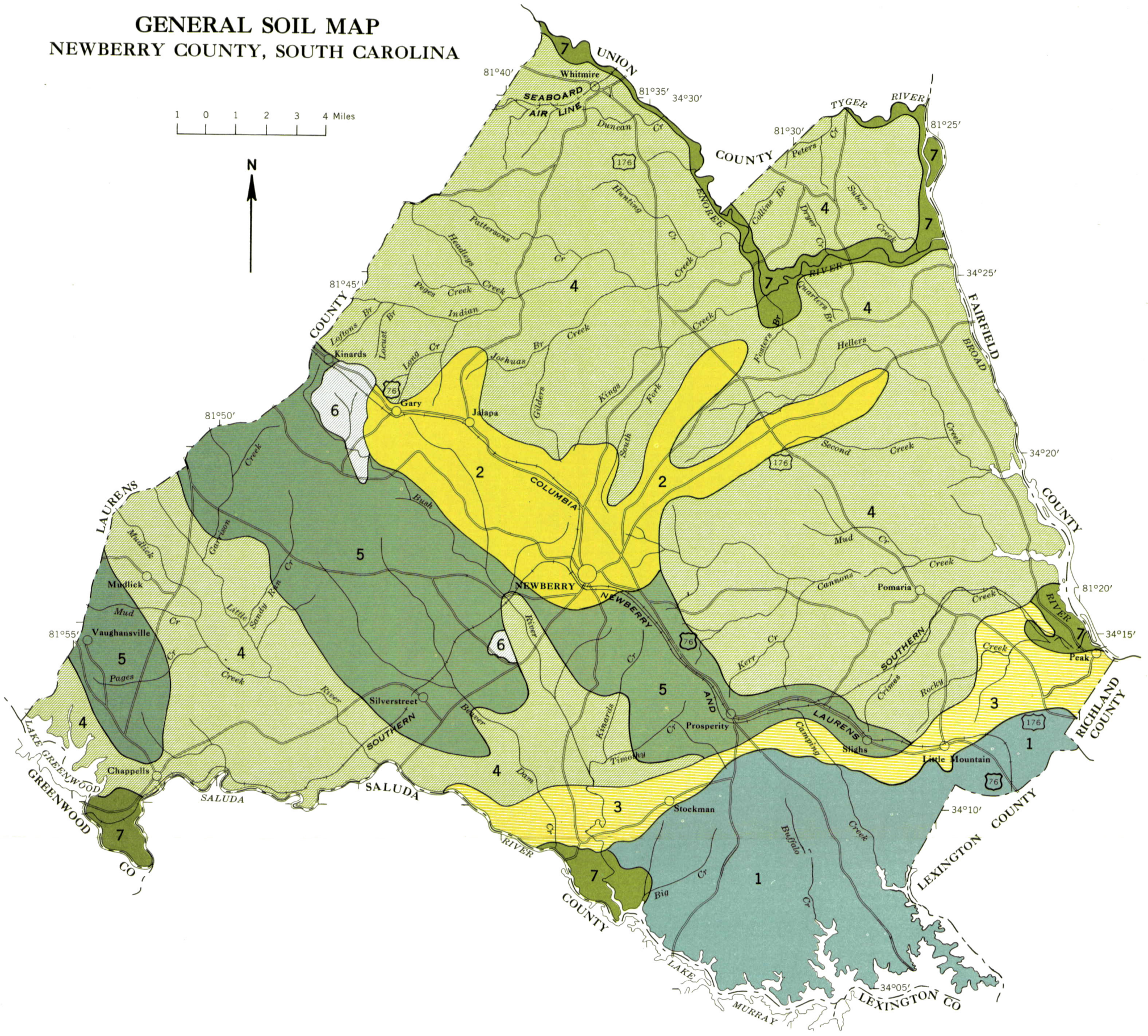
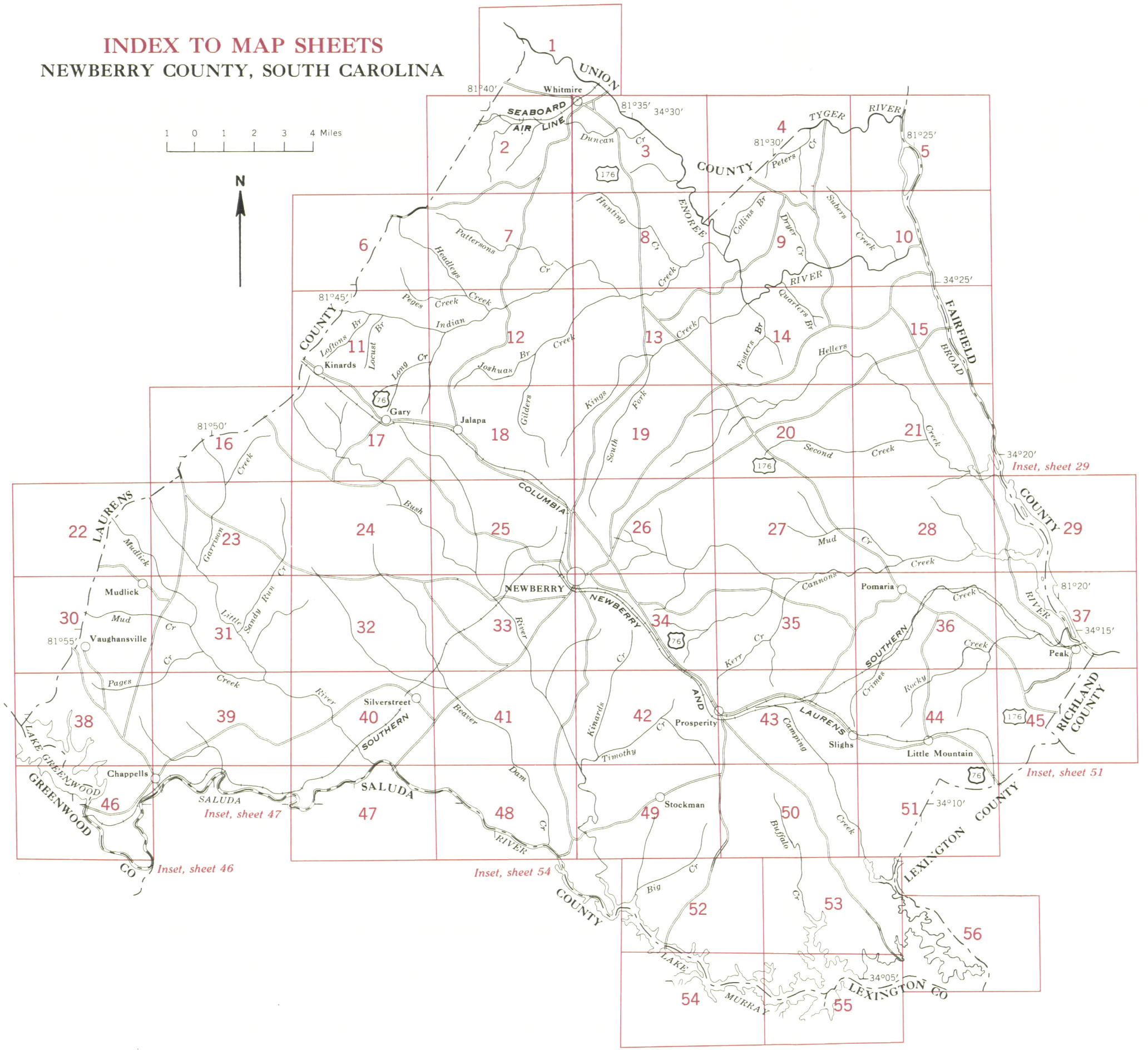
GENERAL SOIL MAP
NEWBERRY COUNTY, SOUTH CAROLINA



SOIL AREA	MAJOR SOIL SERIES	UNDERLYING ROCK OR PARENT MATERIAL
1 Gently to strongly sloping soils with red or yellowish-brown subsoil.	Georgeville, Herndon, Alamance.	Carolina slates (fine-grained metamorphic schist).
2 Gently sloping or sloping sandy loams or loamy sands with red, brown, or yellow subsoil.	Cecil, Appling, Durham.	Acidic rocks (granite, gneiss, schist).
3 Sloping or steep, generally stony soils with red or brown subsoil.	Cecil, Appling, Lloyd, Enon	Acidic and basic rocks; gravel and stones.
4 Gently sloping to steep soils, mostly with red or brown subsoil.	Cecil, Enon. Wilkes, Cataula, Lloyd.	Acidic and basic rocks.
5 Gently sloping to strongly sloping soils with red, brown, or yellow subsoil.	Cecil, Appling, Enon, Helena, Lloyd, Durham, Davidson.	Acidic and basic rocks.
6 Gently sloping soils with brown or red clay subsoil.	Iredell, Mecklenburg, Lloyd.	Basic rocks.
7 Level to strongly sloping soils on bottom lands and stream terraces.	Congaree, Chewacla, Hiwassee, Wickham, Altavista.	General alluvium.

INDEX TO MAP SHEETS
NEWBERRY COUNTY, SOUTH CAROLINA



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

NEWBERRY COUNTY, SOUTH CAROLINA

SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

SOILS LEGEND

SYMBOL	NAME
AaB	Alamance silt loam, gently sloping phase
AaC	Alamance silt loam, sloping phase
AbB	Altavista fine sandy loam, gently sloping phase
AcB	Appling sandy loam, gently sloping phase
AcB2	Appling sandy loam, eroded gently sloping phase
AcC	Appling sandy loam, sloping phase
AcC2	Appling sandy loam, eroded sloping phase
AcD	Appling sandy loam, strongly sloping phase
AcD2	Appling sandy loam, eroded strongly sloping phase
AcE2	Appling sandy loam, eroded moderately steep phase
CaB3	Cataula clay loam, severely eroded gently sloping phase
CaC3	Cataula clay loam, severely eroded sloping phase
CaD3	Cataula clay loam, severely eroded strongly sloping phase
CbB2	Cataula sandy loam, eroded gently sloping phase
CcB3	Cecil clay loam, severely eroded gently sloping phase
CcC3	Cecil clay loam, severely eroded sloping phase
CcD3	Cecil clay loam, severely eroded strongly sloping phase
CcE3	Cecil clay loam, severely eroded moderately steep phase
CdB	Cecil sandy loam, gently sloping phase
CdB2	Cecil sandy loam, eroded gently sloping phase
CdC	Cecil sandy loam, sloping phase
CdC2	Cecil sandy loam, eroded sloping phase
CdD	Cecil sandy loam, strongly sloping phase
CdD2	Cecil sandy loam, eroded strongly sloping phase
CdE	Cecil sandy loam, moderately steep phase
CdE2	Cecil sandy loam, eroded moderately steep phase
CdF2	Cecil sandy loam, eroded steep phase
Ce	Chewacla silt loam
Cf	Colfax sandy loam
Cg	Congaree fine sandy loam
Ch	Congaree silt loam
DaB	Davidson loam, gently sloping phase
DbB	Durham sandy loam, gently sloping phase
DbC	Durham sandy loam, sloping phase
DcB	Durham loamy sand, gently sloping thick surface phase
DcC	Durham loamy sand, sloping thick surface phase
EaB	Efland silt loam, gently sloping phase
EaC2	Efland silt loam, eroded sloping phase
EbB	Enon sandy loam, gently sloping phase
EbB2	Enon sandy loam, eroded gently sloping phase
EbC	Enon sandy loam, sloping phase
EbC2	Enon sandy loam, eroded sloping phase
EbD	Enon sandy loam, strongly sloping phase
EbD2	Enon sandy loam, eroded strongly sloping phase
EbE	Enon sandy loam, moderately steep phase
EbE2	Enon sandy loam, eroded moderately steep phase
GaB	Georgeville silt loam, gently sloping phase
GaC	Georgeville silt loam, sloping phase
GaD	Georgeville silt loam, strongly sloping phase
GbB2	Georgeville silty clay loam, eroded gently sloping phase
GbC2	Georgeville silty clay loam, eroded sloping phase
GbC3	Georgeville silty clay loam, severely eroded sloping phase
GbD3	Georgeville silty clay loam, severely eroded strongly sloping phase
GcC	Goldston silt loam, sloping phase
GcD	Goldston silt loam, strongly sloping phase
HaB	Helena sandy loam, gently sloping phase
HaC	Helena sandy loam, sloping phase
HaC2	Helena sandy loam, eroded sloping phase
HaD2	Helena sandy loam, eroded strongly sloping phase
HbB	Helena loamy sand, gently sloping thick surface phase
HcB	Herndon silt loam, gently sloping phase
HcB2	Herndon silt loam, eroded gently sloping phase
HcC	Herndon silt loam, sloping phase
HcC2	Herndon silt loam, eroded sloping phase
HcD	Herndon silt loam, strongly sloping phase
HcD2	Herndon silt loam, eroded strongly sloping phase
HdB	Hiwassee sandy loam, gently sloping phase
HdB2	Hiwassee sandy loam, eroded gently sloping phase
HdC	Hiwassee sandy loam, sloping phase
HdC2	Hiwassee sandy loam, eroded sloping phase
HdD2	Hiwassee sandy loam, eroded strongly sloping phase
IaB	Iredell sandy loam, gently sloping phase
LaB3	Lloyd clay loam, severely eroded gently sloping phase
LaC3	Lloyd clay loam, severely eroded sloping phase
LaD3	Lloyd clay loam, severely eroded strongly sloping phase
LbB	Lloyd sandy loam, gently sloping phase
LbB2	Lloyd sandy loam, eroded gently sloping phase
LbC	Lloyd sandy loam, sloping phase
LbC2	Lloyd sandy loam, eroded sloping phase
LbD	Lloyd sandy loam, strongly sloping phase
LbD2	Lloyd sandy loam, eroded strongly sloping phase
LbE	Lloyd sandy loam, moderately steep phase
Lc	Local alluvial land, well drained
LdB3	Lockhart clay loam, severely eroded gently sloping phase
LdC3	Lockhart clay loam, severely eroded sloping phase
MaB	Mecklenburg sandy loam, gently sloping phase
MaC	Mecklenburg sandy loam, sloping phase
MaC2	Mecklenburg sandy loam, eroded sloping phase
MaD2	Mecklenburg sandy loam, eroded strongly sloping phase
Mb	Mixed alluvial land, poorly drained
Mc	Mixed alluvial land, well drained
Md	Moderately gullied land, firm materials
Me	Moderately gullied land, friable materials
OaB	Orange silt loam, gently sloping phase
Sa	Severely gullied land
TaB	Tirzah silt loam, gently sloping phase
TaB2	Tirzah silt loam, eroded gently sloping phase
TaC	Tirzah silt loam, sloping phase
TaC2	Tirzah silt loam, eroded sloping phase
TaD2	Tirzah silt loam, eroded strongly sloping phase
WaB	Wickham fine sandy loam, gently sloping phase
WaC	Wickham fine sandy loam, sloping phase
WbB	Wilkes sandy loam, gently sloping phase
WbC	Wilkes sandy loam, sloping phase
WbC2	Wilkes sandy loam, eroded sloping phase
WbD	Wilkes sandy loam, strongly sloping phase
WbD2	Wilkes sandy loam, eroded strongly sloping phase
WbE	Wilkes sandy loam, moderately steep phase
WbE2	Wilkes sandy loam, eroded moderately steep phase
WbF	Wilkes sandy loam, steep phase
WbF2	Wilkes sandy loam, eroded steep phase
WcB	Worsham sandy loam, gently sloping phase

Soils surveyed 1938-56 by Wallace J. Camp, William E. Jones, P. R. Milford, Sam H. Hearn, and L. E. Aull, Soil Conservation Service. Correlation by Glenn H. Robinson, Soil Conservation Service.

Soil map constructed 1958 by Cartographic Division, Soil Conservation Service, USDA, from 1954 aerial photographs. Controlled mosaic based on South Carolina plane coordinate system, north zone, Lambert conformal conic projection, 1927 North American datum.

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Roads
- Good motor
- Poor motor
- Trail
- Marker, U. S. (33)

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail, foot
- Railroad
- Ferry
- Ford
- Grade
- R. R. over
- R. R. under
- Tunnel

Buildings
- School
- Church
- Station

Mine and Quarry
- Shaft
- Dump
- Prospect

Pits, gravel or other

Power line

Pipeline

Cemetery

Dam

Levee

Tank

Oil well

Windmill

Canal lock (point upstream)

BOUNDARIES

- National or state
- County
- Township, civil
- Township, U. S.
- Section line, corner
- City (corporate)
- Reservation
- Land grant

DRAINAGE

Streams
- Perennial
- Intermittent, unclass.
- Crossable with tillage implements
- Not crossable with tillage implements

Canals and ditches (CANAL / DITCH)

Lakes and ponds
- Perennial
- Intermittent

Wells (flowing)

Springs

Marsh

Wet spot

RELIEF

Escarpments
- Bedrock
- Other

Prominent peaks

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

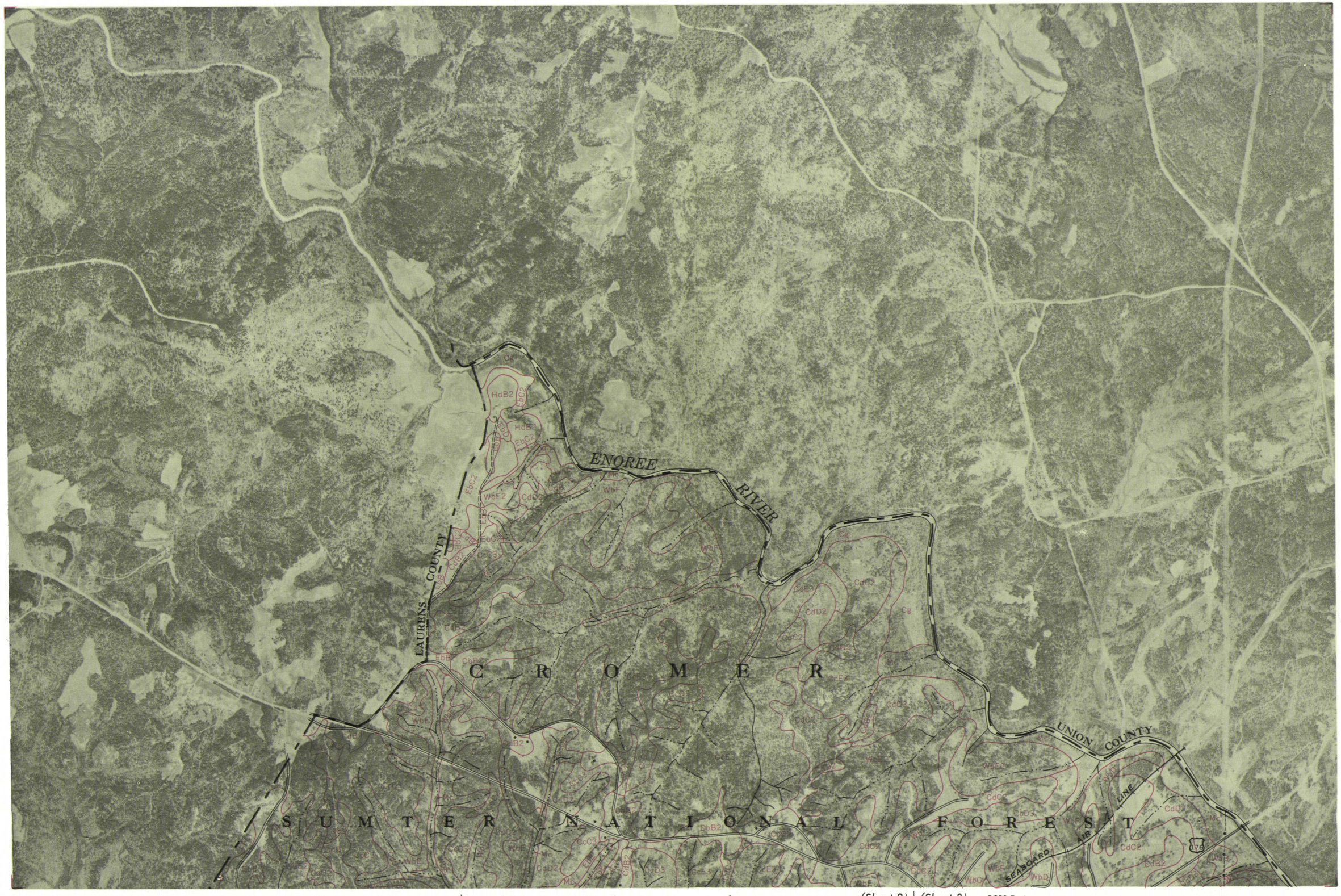
SOIL SURVEY DATA

- Soil type outline and symbol (Dx)
- Gravel
- Stones
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land

Erosion
- Uneroded spot — U
- Sheet, moderate — S
- Sheet, severe — SS
- Gully, moderate — G
- Gully, severe — GG
- Sheet and gully, moderate — SG
- Wind, moderate
- Wind, severe
- Blowout
- Wind hummock
- Overblown soil

Gullies

Areas of alkali and salts
- Strong — A
- Moderate — M
- Slight — S
- Free of toxic effect — F
- Sample location — ● 26
- Saline spot — +



0 ½ 1 Mile Scale 1:20000 0 5000 Feet

(Sheet 2) | (Sheet 3)

NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 5)

N

(Sheet 9)

(Sheet 15)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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(Sheet 6)

(Sheet 12)

(Sheet 17)

0 1/2 1 Mile Scale 1:20 000 0 5000 Feet

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12

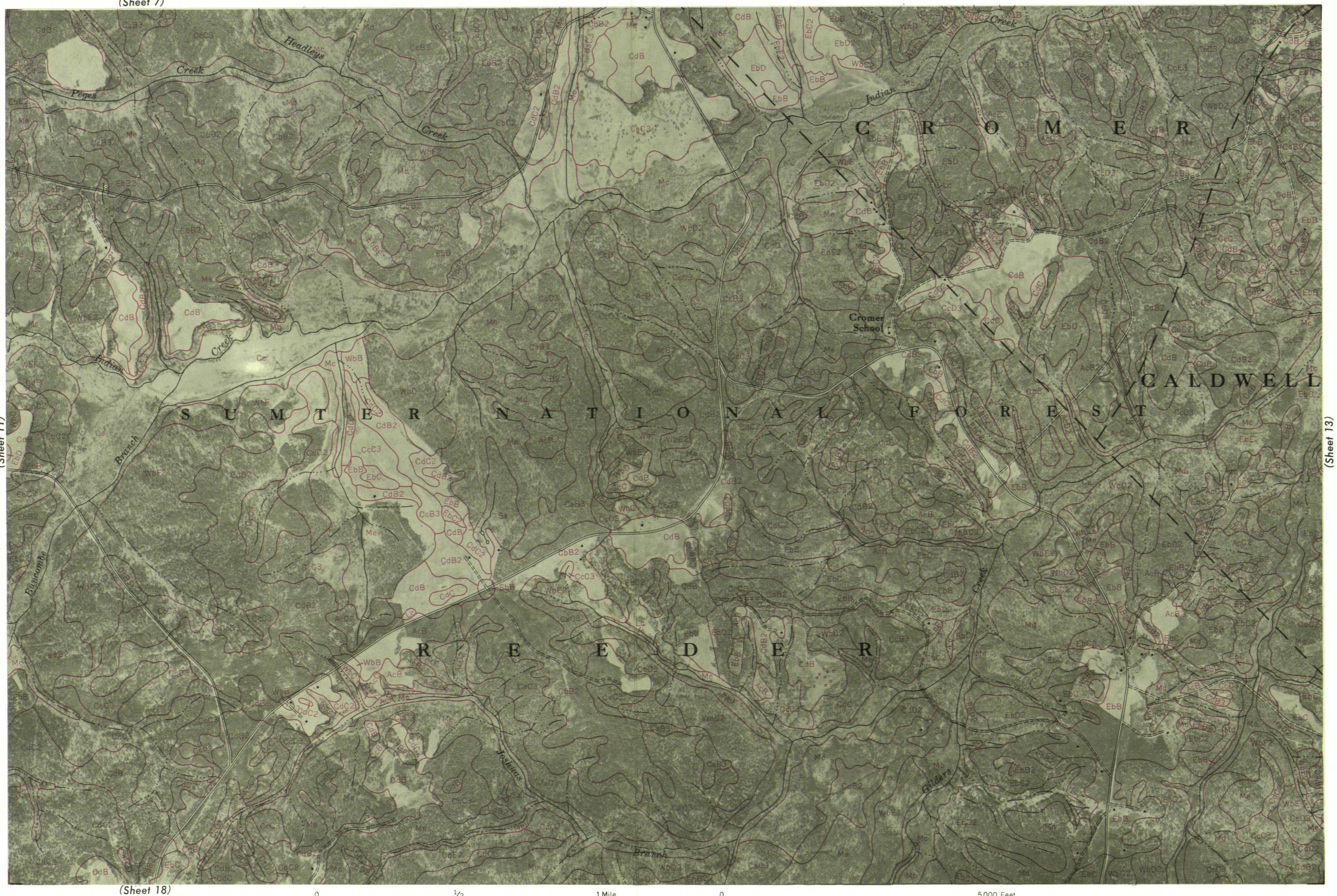
(Sheet 7)

N

(Sheet 11)

(Sheet 13)

(Sheet 18)



0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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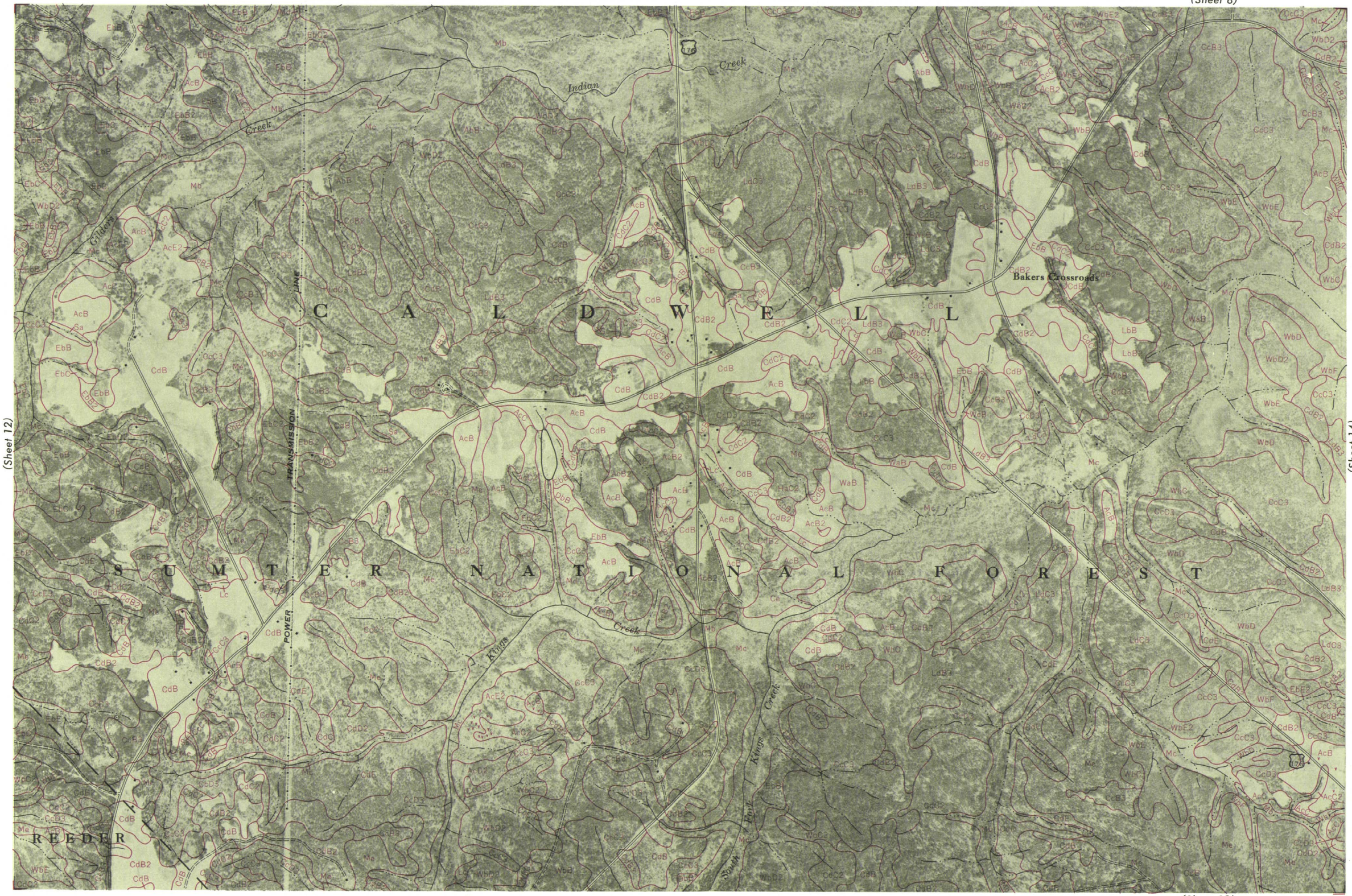
(Sheet 8)



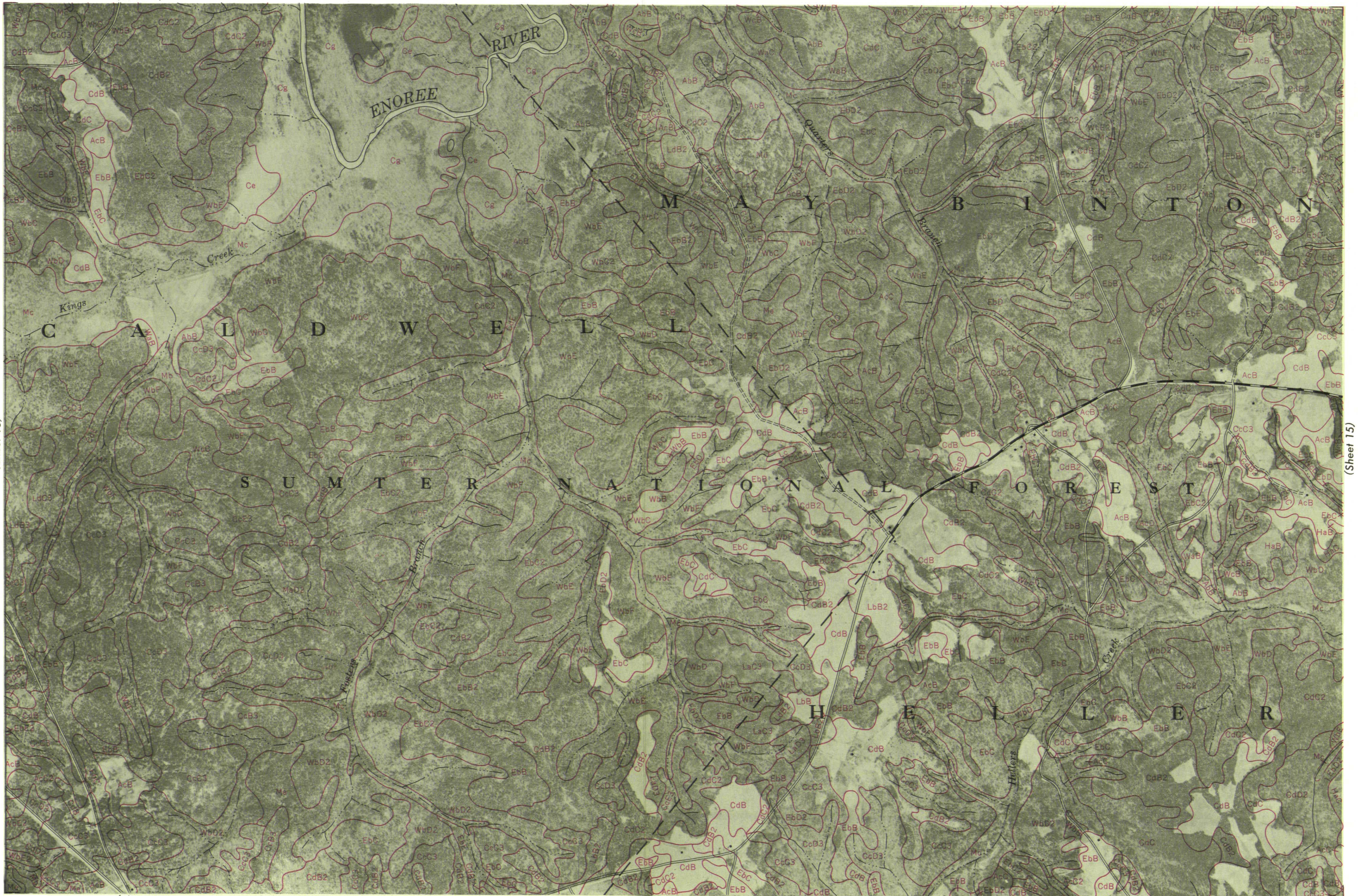
(Sheet 12)

(Sheet 14)

(Sheet 19)

(Sheet 9)

(Sheet 13)



(Sheet 15)

(Sheet 20)

0 1/2 1 Mile
Scale 1:20 000
0 5000 Feet

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(Sheet 10)

N

(Sheet 14)

MAYBINTON

SUMTER NATIONAL FOREST

HELLER

FAIRFIELD COUNTY

BROAD RIVER

Mt Pleasant Church

Glymphville

St Matthews Church

Mt Hellers

NATIONAL FOREST BOUNDARY

WbE Creek

0 ½ 1 Mile

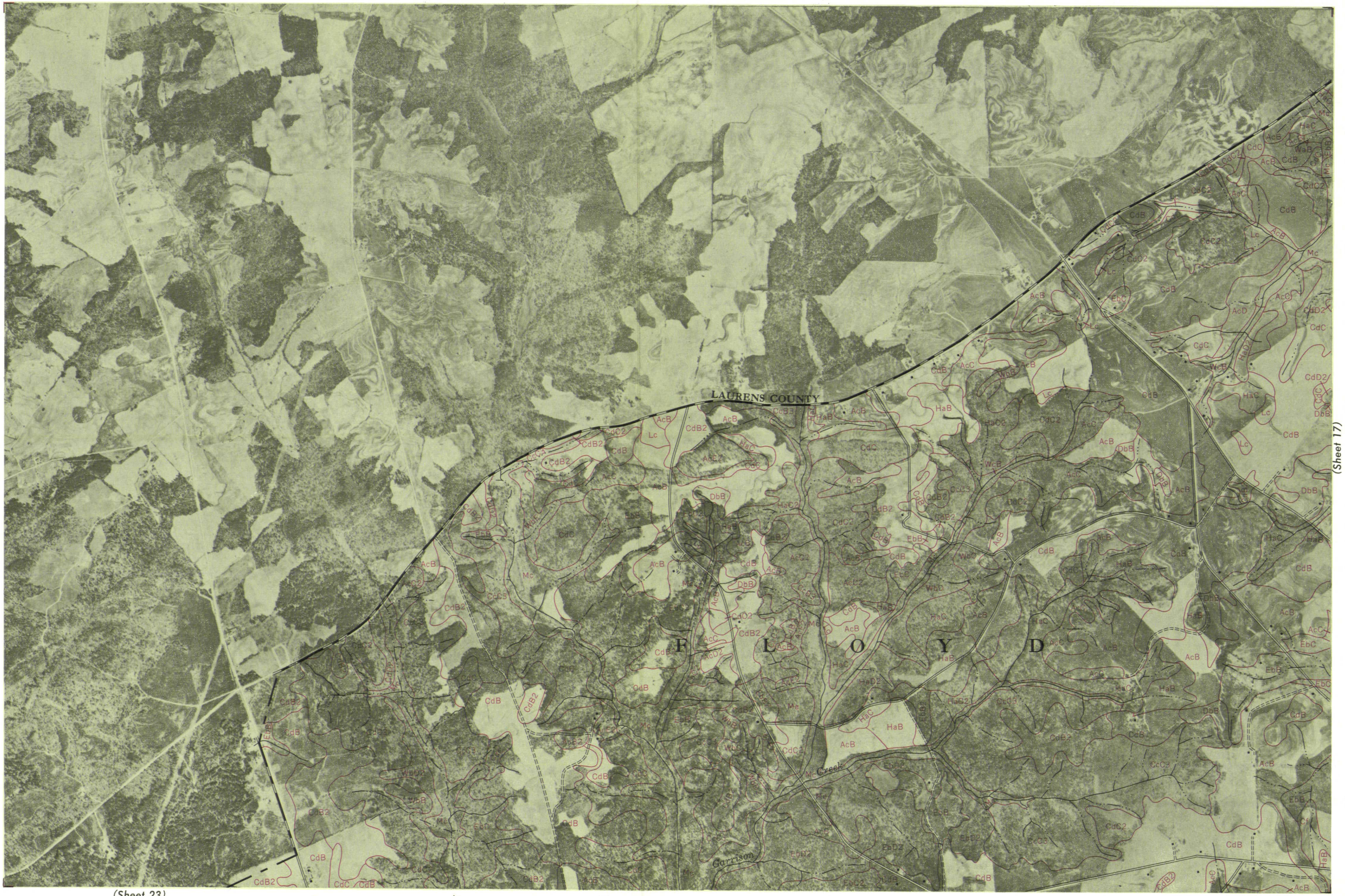
Scale 1:20000

0 5000 Feet

(Sheet 21)

16

N



(Sheet 17)

(Sheet 23)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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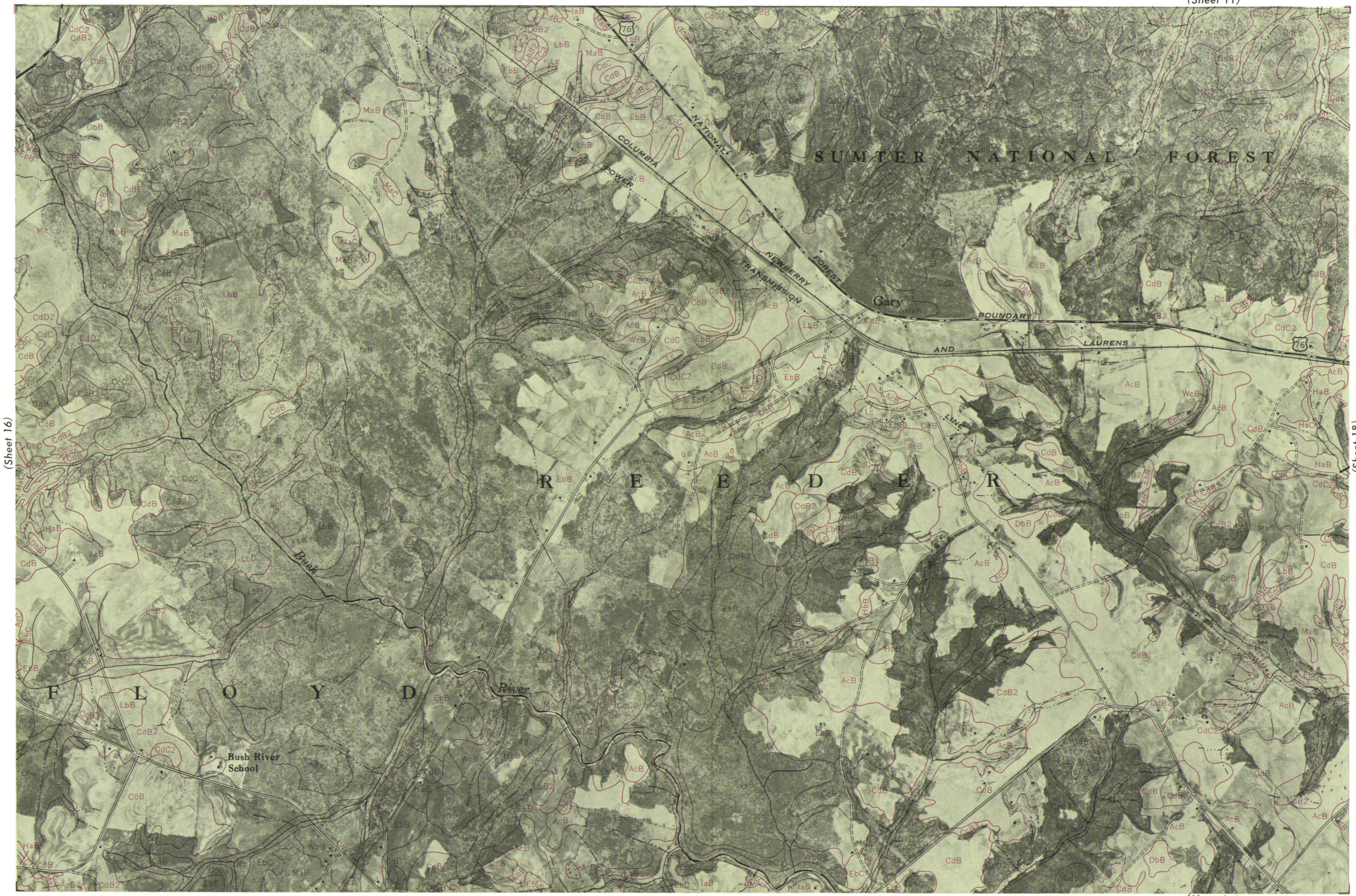
(Sheet 11)

N



(Sheet 16)

(Sheet 18)

(Sheet 24)

0 ½ 1 Mile Scale 1:20 000 0 5000 Feet

NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 12)

N

(Sheet 17)

(Sheet 19)

(Sheet 25)

R E E D E R

S U M T E R N A T I O N A L F O R E S T

N E W B E R R Y

St James Church

Jalapa

Jalapa School

Callie Par Church

Beth Eden Church

Gilders Creek

NATIONAL FOREST BOUNDARY

COLUMBIA AND NEWBERRY LAURENS

POWER TRANSMISSION LINE

76

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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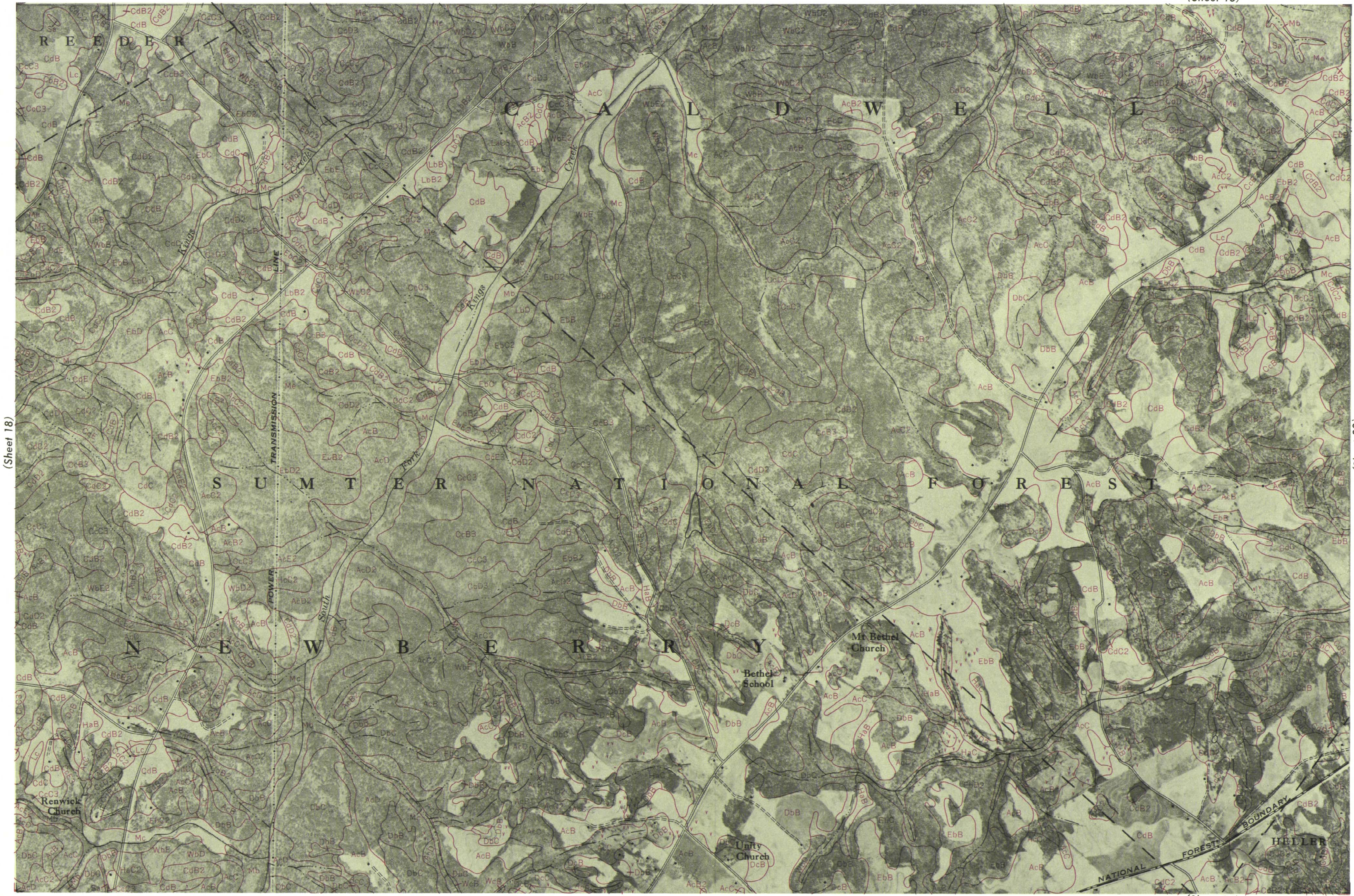
(Sheet 13)



(Sheet 18)

(Sheet 20)

(Sheet 26)

Scale 1:20 000

0 ½ 1 Mile

0 5000 Feet

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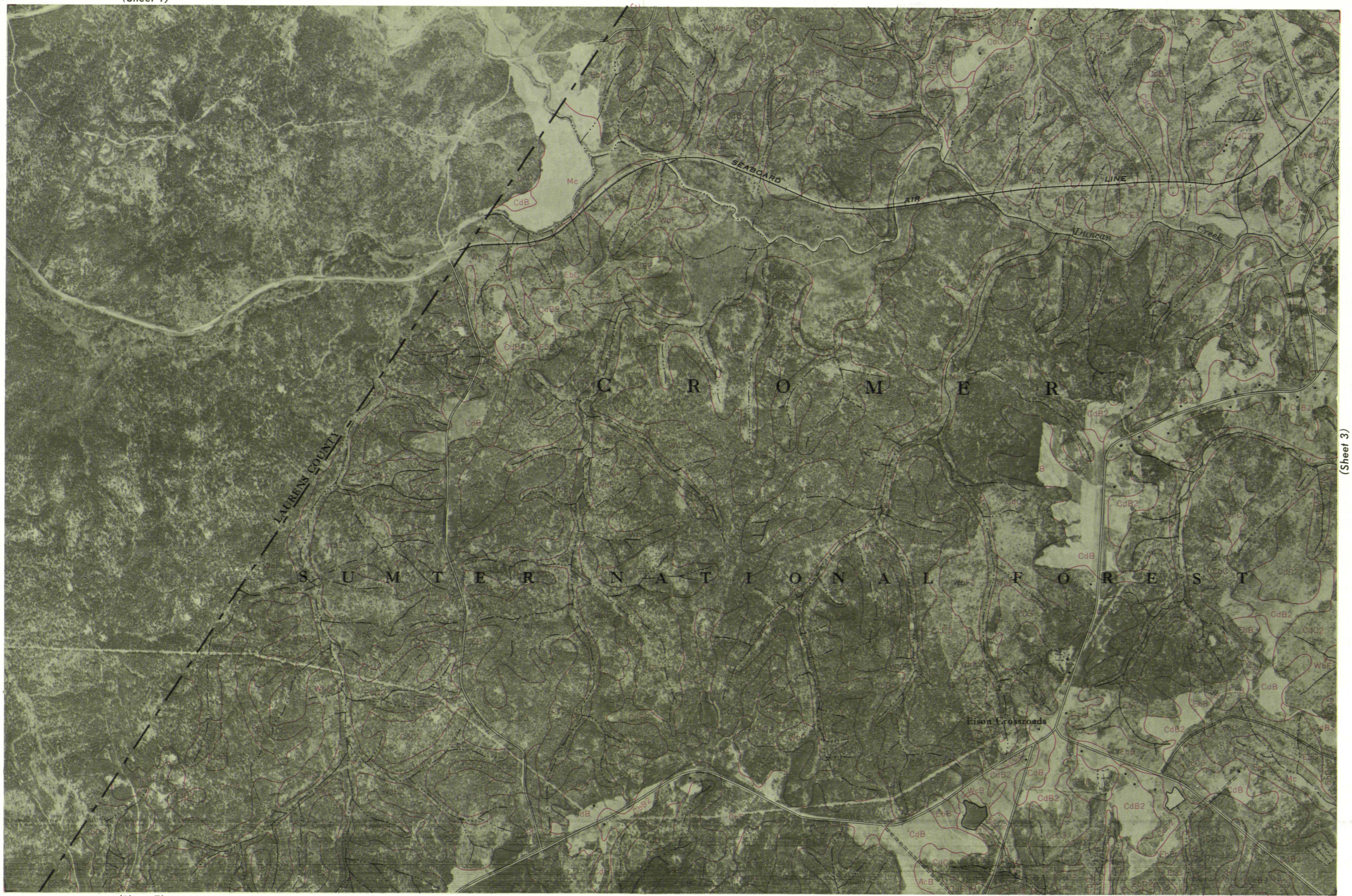
NEWBERRY COUNTY, SOUTH CAROLINA

(2)

(Sheet 1)

N



(Sheet 7)

(Sheet 3)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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(Sheet 14)

N

Browns Crossroads

ALDWELL

Heller's Creek

Fairview Church and School

Enoree Church

Keitts Crossroads

HELLER

Second Creek

(Sheet 19)

(Sheet 21)

(Sheet 27)

0 ½ 1 Mile

Scale 1:20 000

0 5 000 Feet

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(Sheet 15)

21

N

FAIRFIELD COUNTY — BROAD RIVER

HELLER Creek

Second Creek

(Sheet 20)

(Inset Sheet 29)

(Sheet 28)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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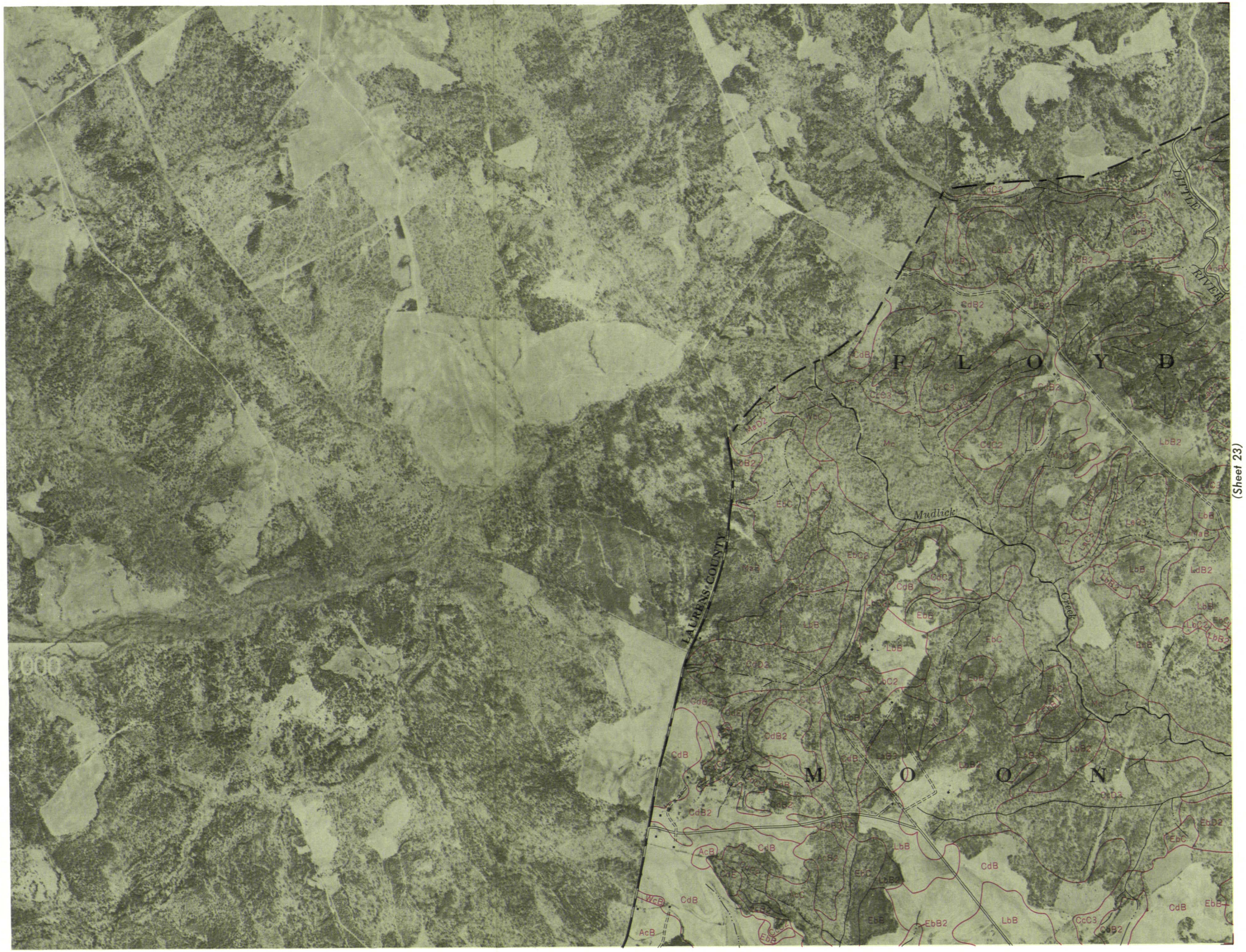
22

N



(Sheet 23)

(Sheet 30)

0 ½ 1 Mile

Scale 1:20 000

0 5000 Feet

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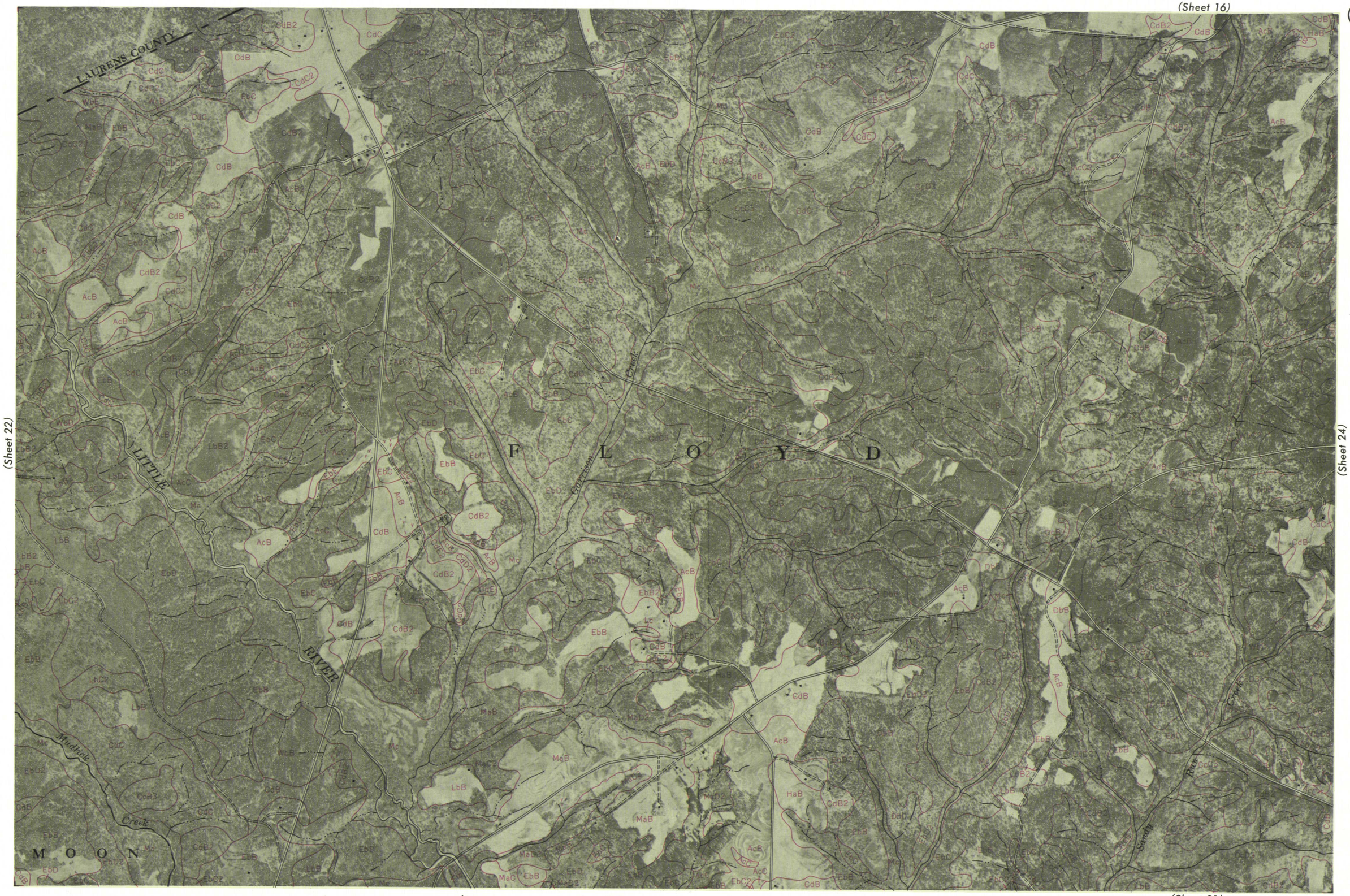

(Sheet 22)

(Sheet 24)

(Sheet 31)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(24)

(Sheet 17)

N

Bush River Church

R E E D E R

N E W B E R R Y

Bush River

F L O Y D

(Sheet 23)

(Sheet 25)

(Sheet 32)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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(Sheet 18)

25

(Sheet 24)

(Sheet 26)

(Sheet 33)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 19)

N

(Sheet 25)

(Sheet 27)

(Sheet 34)

SUMTER NATIONAL FOREST

NEWBERRY

HELLER

CANNON

Mount Bethel School

Pleasant Grove Church

COUNTY HOME

NATIONAL FOREST BOUNDARY

POWER TRANSMISSION LINE

North Chappells Creek

Cannons Creek

76

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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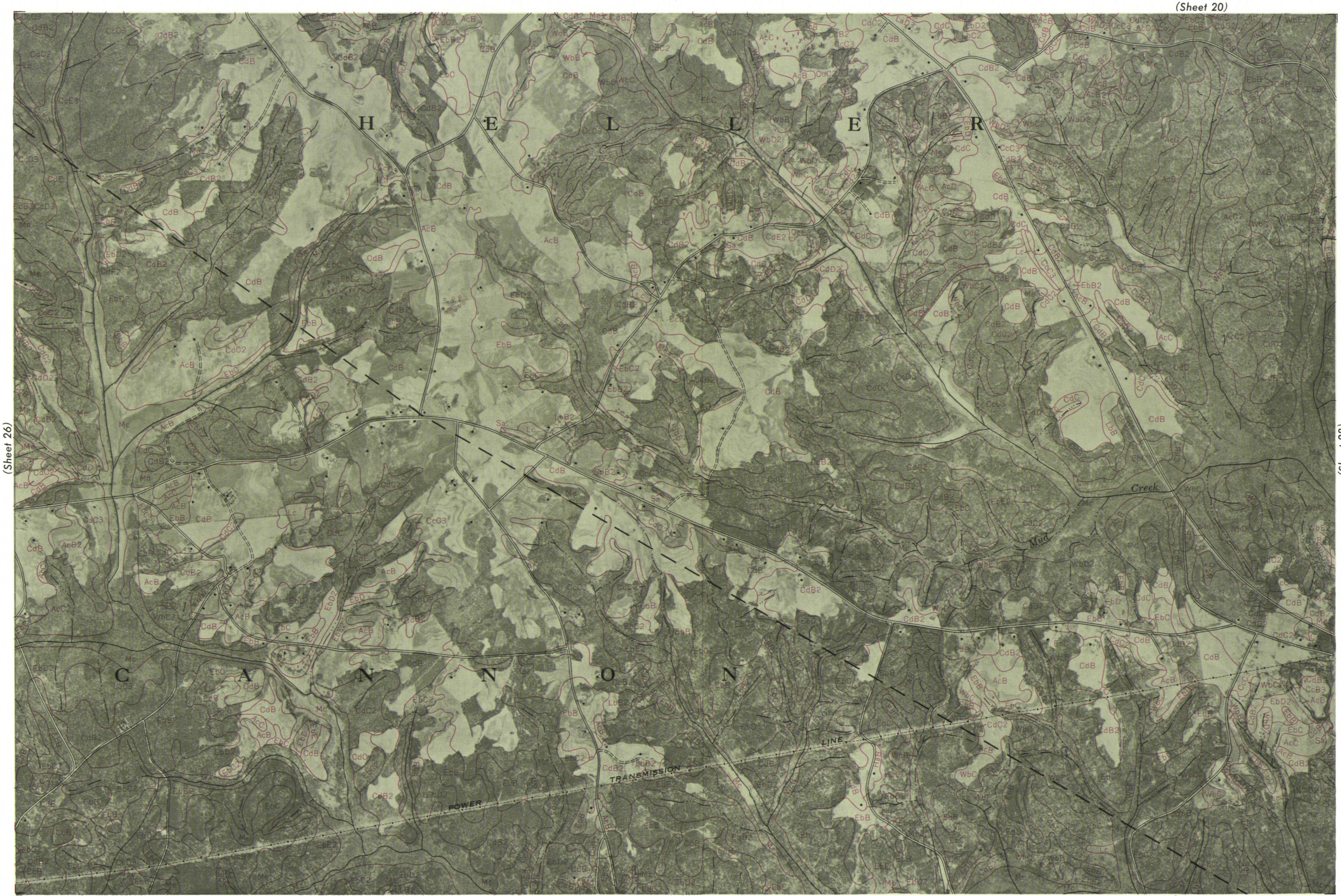

N

(Sheet 26)

(Sheet 28)

(Sheet 35)

0 ½ 1 Mile Scale 1:20000 0 5000 Feet

NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 21)

N

(Sheet 27)

(Sheet 29)

(Sheet 36)

HELLER

POWER TRANSMISSION LINE

Mud Creek

Cannons Creek

Bethlehem Church

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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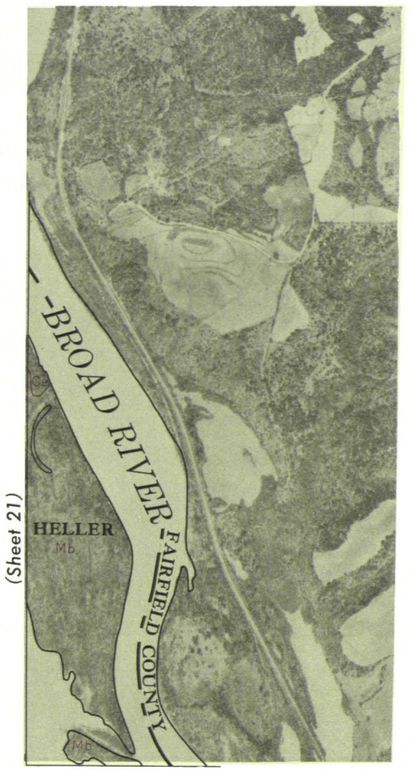

N

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 1)

3

N

(Sheet 2)

WHITMIRE

SEABOARD

UNION COUNTY

ENOREE RIVER

C R O M E R

S U M T E R N A T I O N A L F O R E S T

Diamond Creek

POWER TRANSMISSION LINE

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Sheet 8)

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(Sheet 22)

N

(Sheet 31)

(Sheet 38)

Mudlick

Vaughansville

Brown Chapel

Mud Creek

LAURENS COUNTY

M O O N

0 ½ 1 Mile

Scale 1:20 000

0 5000 Feet

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N

(Sheet 30)

(Sheet 32)

(Sheet 39)

0 ½ 1 Mile Scale 1:20 000 0 5 000 Feet

(Sheet 24)

N

(Sheet 31)

(Sheet 33)

(Sheet 40)

Belmont Church

Smyrna Church

Trinity Church

FLOYD

TRANSMISSION LINE

POWER

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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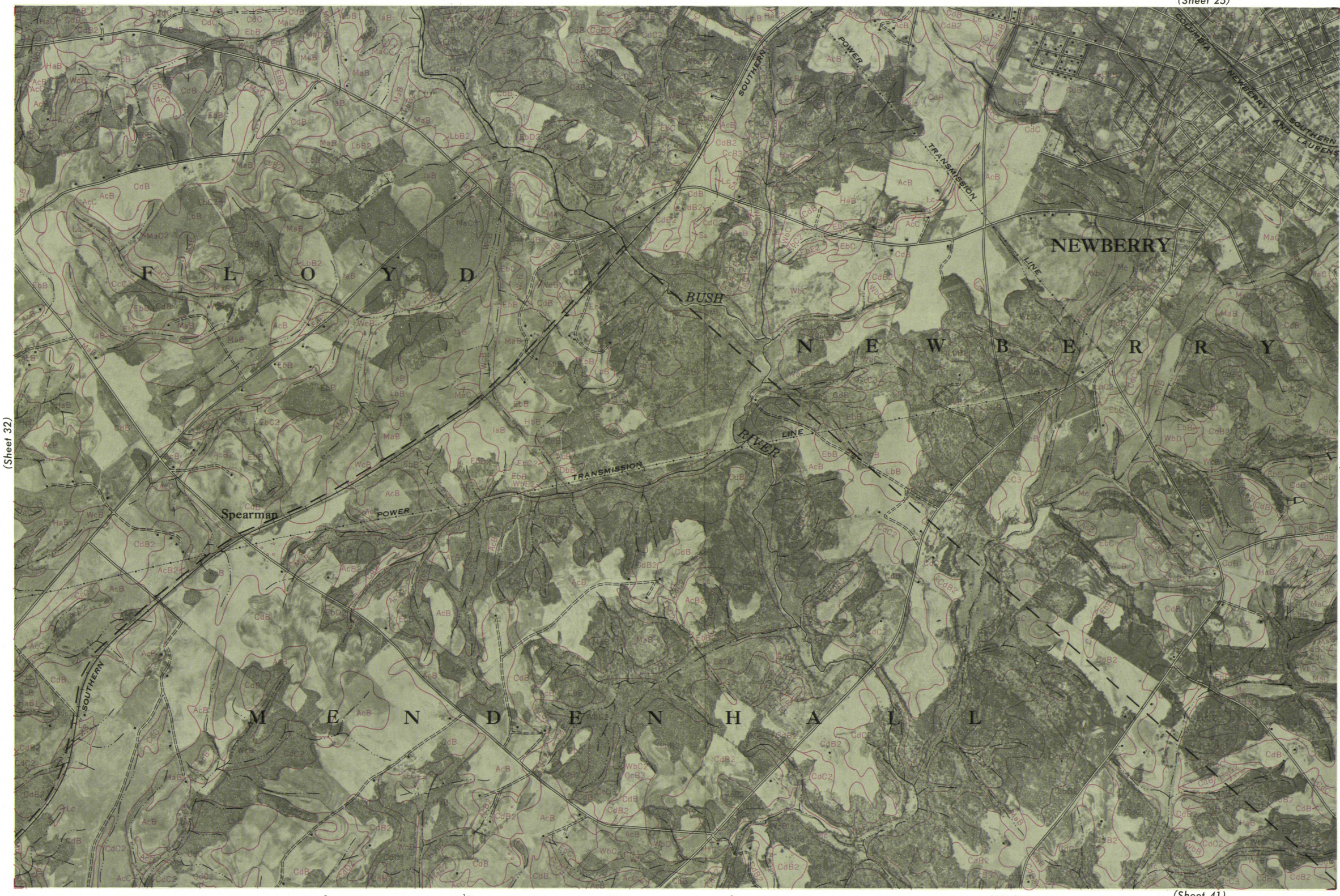
(Sheet 25)

N



(Sheet 32)

(Sheet 34)

(Sheet 41)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Sheet 26)

N

NEWBERRY

SOUTHERN

COLUMBIA

NEWBERRY

POWER TRANSMISSION LINE

POWER TRANSMISSION LINE

Johnston Church and School

Rock Hill Church

Southeast Newberry

SOUTHERN AND LAURENS

Ebenezer Church

NEWBERRY

(Sheet 33)

(Sheet 35)

(Sheet 42)

0 ½ 1 Mile

Scale 1:20 000

0 5000 Feet

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(Sheet 34)

(Sheet 36)

(Sheet 43)

N

HELLER

Creek

Cannons

Taylors Crossroads

Kerr Creek

POWER TRANSMISSION LINE

Jollystreet

Mt Hebron Church and School

St Pauls Church

CANNON

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Sheet 28)

N

(Sheet 35)

(Sheet 37)

(Sheet 44)

POMARIA

Crimes Creek

SOUTHERN

H E L L E R

C A N N O N

Creeks

Rocky Creeks

TOWNSHIP 12

0 ½ 1 Mile

Scale 1:20 000

0 5000 Feet

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(Sheet 29)

(Sheet 30)

N

(Sheet 39)

(Sheet 46)

LAURENS COUNTY

GREENWOOD COUNTY

LAKE

GREENWOOD

LAKE GREENWOOD

M O O N

Pages Creek

TRANSMISSION LINES

Chappell School

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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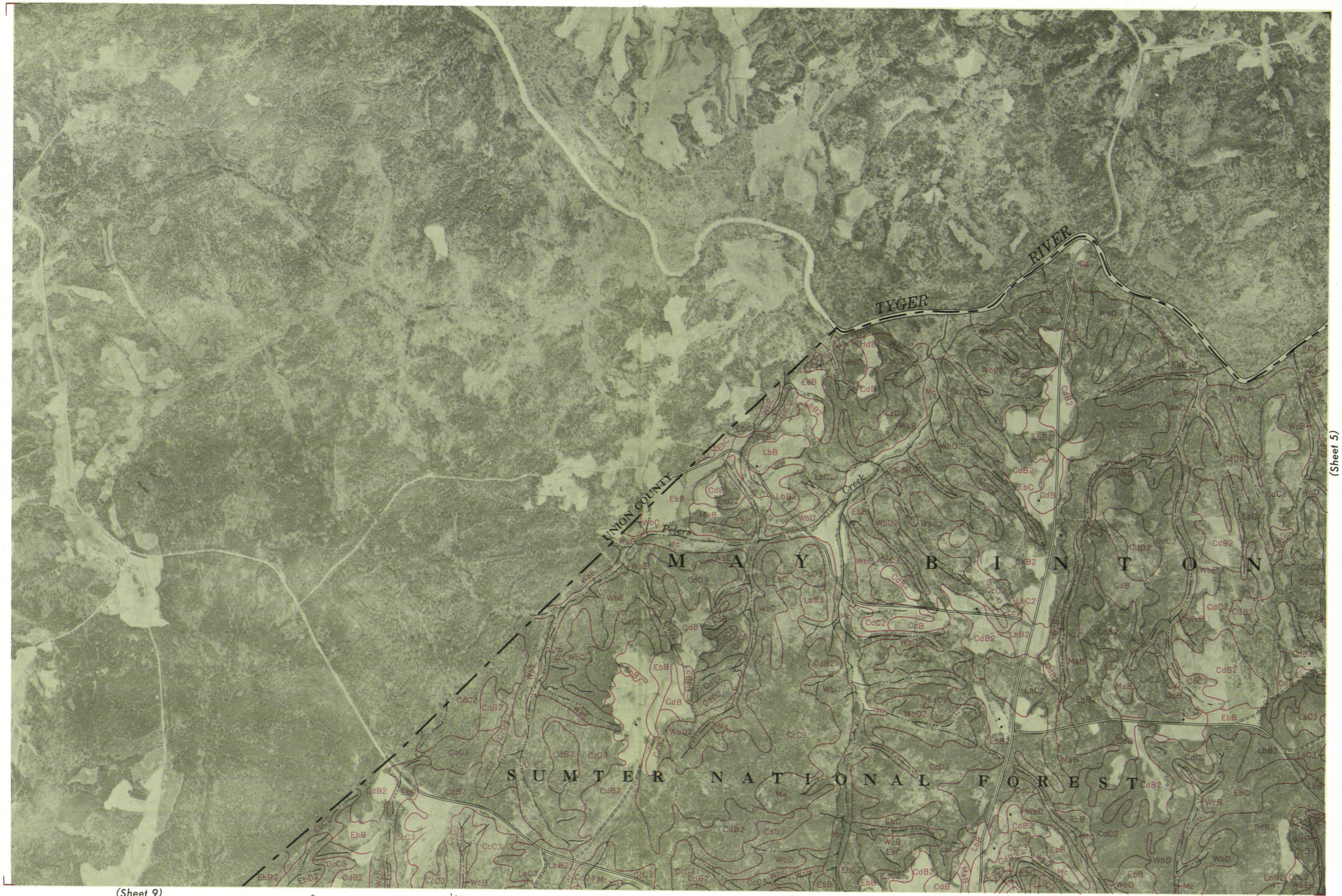
0 ½ 1 Mile Scale 1:20 000 0 5000 Feet

N



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(Sheet 32)

N

(Sheet 39)

(Sheet 41)

(Sheet 47)

FLOYD

MOON

MENDENHALL

Mt Zion Church

SILVERSTREET

Deadfall Crossroads

SOUTHERN

LITTLE RIVER

SALUDA COUNTY

SALUDA RIVER

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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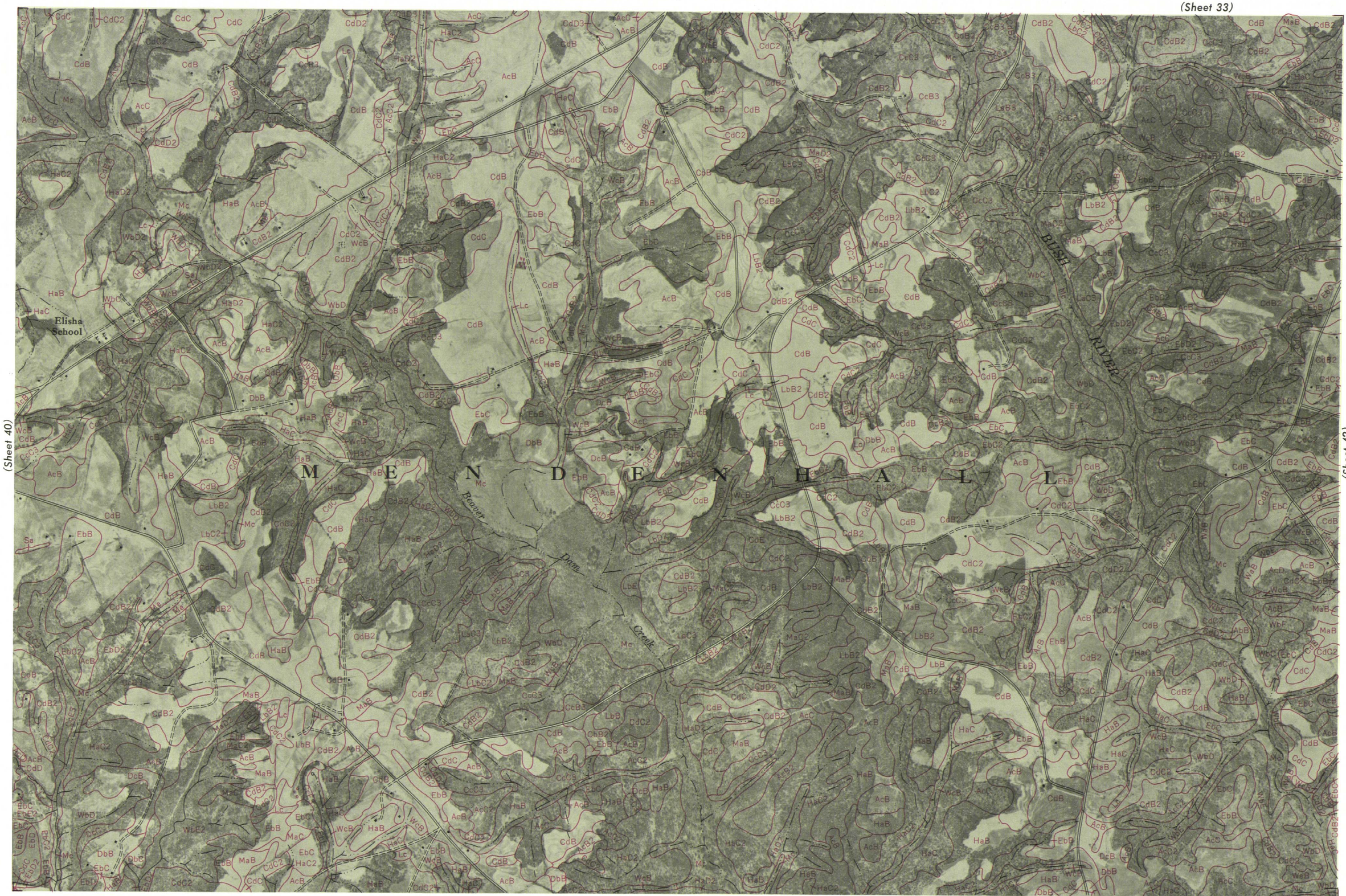
(Sheet 33)

N

(Sheet 40)

(Sheet 42)



(Sheet 48)

0 ½ 1 Mile

Scale 1:20 000

0 5000 Feet

(Sheet 34)

N

(Sheet 41)

(Sheet 43)

(Sheet 49)

Knards Creek

Timothy Creek

Timothy Creek

COLUMBIA, NEWBERRY AND LAURENS SOUTHERN RAILWAY

NEWBERRY

MENDENHALL

PROSPERITY

STONY BATTERY

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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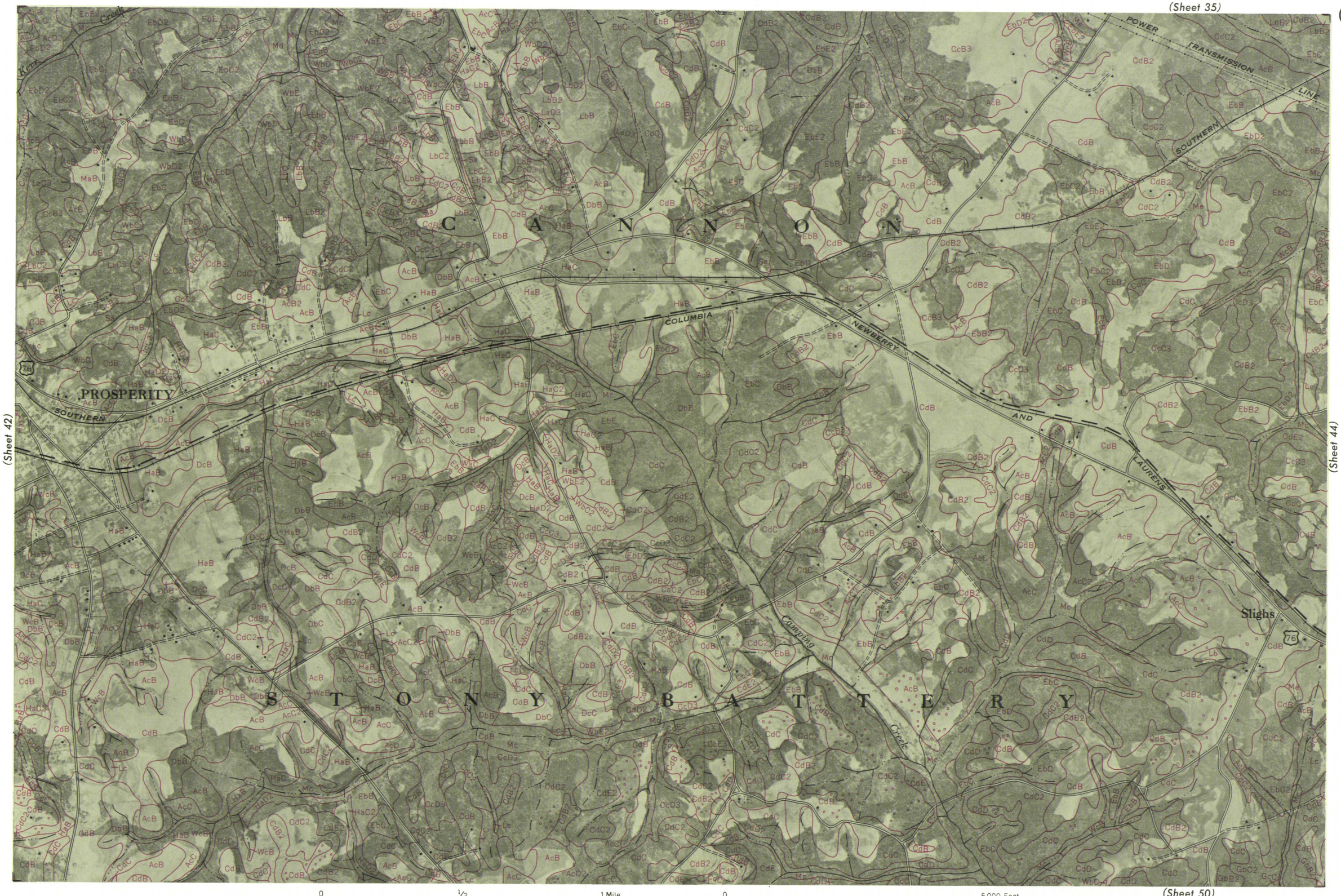

(Sheet 42)

(Sheet 44)

(Sheet 50)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 36)

N

(Sheet 43)

(Sheet 45)

(Sheet 51)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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(Sheet 37)

N

(Sheet 44)

T O W N S H I P 12

LEXINGTON COUNTY

RICHLAND COUNTY

TRANSMISSION

POWER

(Inset Sheet 51)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Sheet 38)

NEWBERRY COUNTY, SOUTH CAROLINA

N

LAKE GREENWOOD

DYSON'S BRIDGE

MOON

Chappells

SALUDA RIVER

SOUTHERN

SALUDA COUNTY

GREENWOOD COUNTY

(Inset Sheet 47)

(Sheet 46)

MOON

SALUDA RIVER

GREENWOOD COUNTY

SALUDA CO

(Inset Sheet 46)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 40)

(Sheet 48)

(Inset)

(Sheet 46)

Inset

(Sheet 39)

(Sheet 47)

Old Town

Chappells

M O O N

M E N D E N H A L L

SOUTHERN

SALUDA RIVER

SALUDA COUNTY

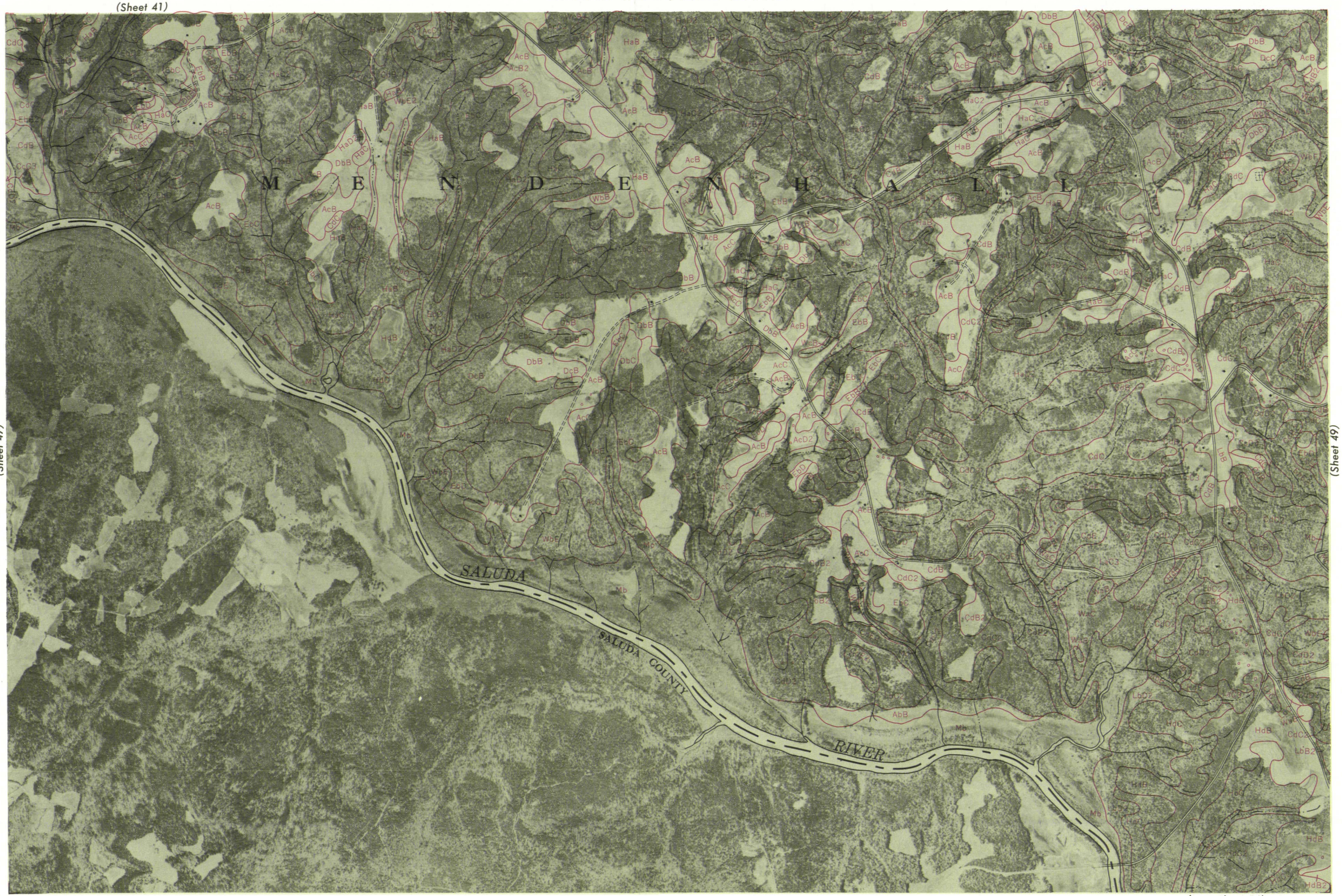
0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Sheet 41)

N



(Sheet 47)

(Sheet 49)

(Inset Sheet 54)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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(Sheet 42)

(Sheet 48)

(Sheet 50)

N

NEWBERRY

MENDENHALL

STONY BATTERY

Stockman

St Lukes Church

Haney Hill School

BUSH RIVER

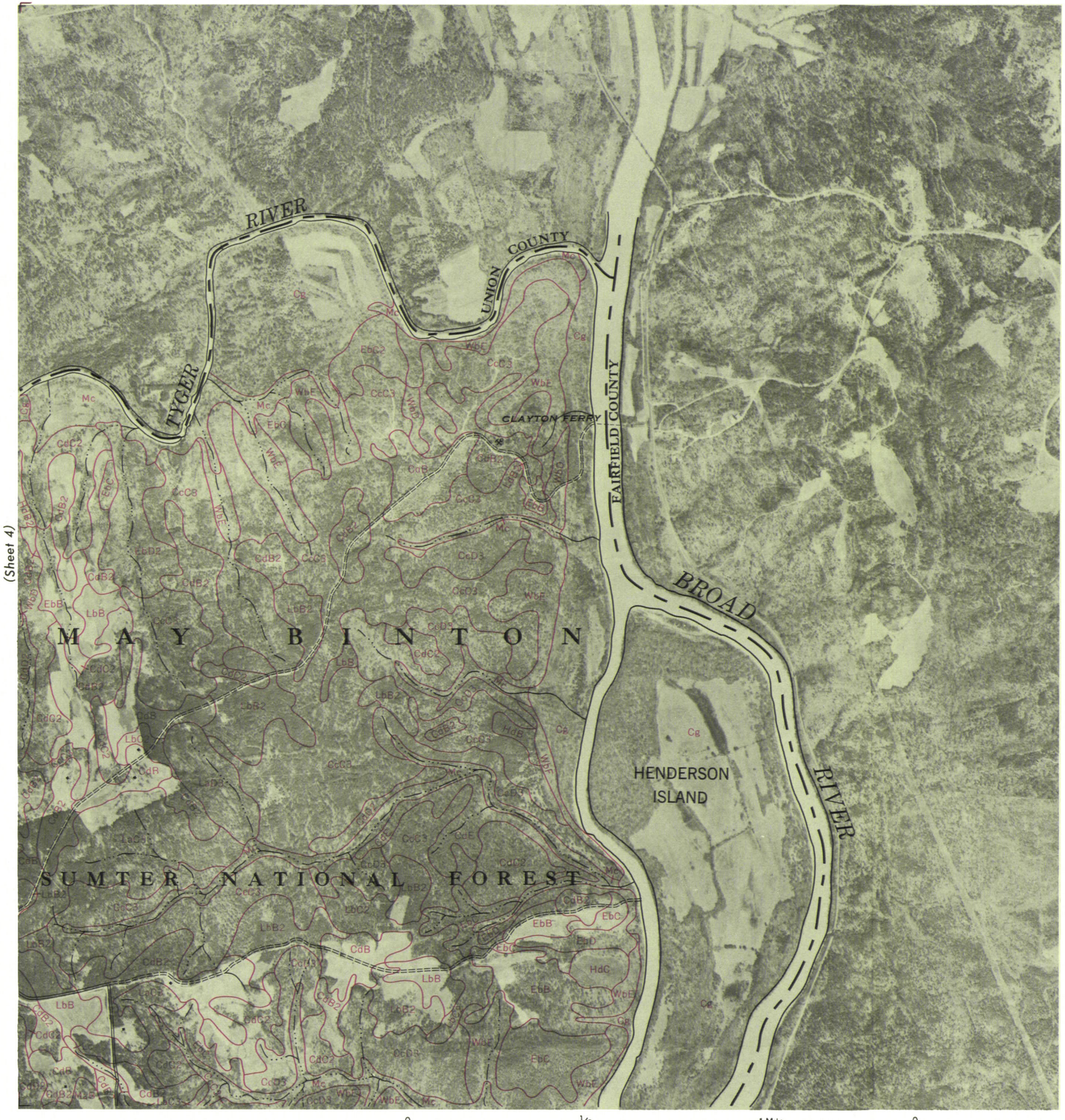
(Inset Sheet 54)

½ (Sheet 52)

0 1 Mile

Scale 1:20000

0 5000 Feet



(Sheet 4)

(Sheet 10)

(Sheet 43)

N

(Sheet 49)

(Sheet 51)

STONY BATTERY

Crampond Creek

Buffalo Creek

Zion Church

Fairview School

(Sheet 52) | ½ (Sheet 53)

0 1 Mile

Scale 1:20000

0 5000 Feet

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(Sheet 44)

(Inset)

N

(Sheet 50)

STONY BATTERY

TOWNSHIP 12

LITTLE MOUNTAIN

LEXINGTON COUNTY

(Sheet 45)

(Sheet 51)

(Sheet 53)

0 1/2 1 Mile

Scale 1:20 000

0 5000 Feet

NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 49) | (Sheet 50)

N

(Inset Sheet 54)

MENDENHALL

STONY BATTERY

Big Creek

LAKE MURRAY

SALUDA COUNTY

Mt Moriah Church and School

(Sheet 53)

(Sheet 54)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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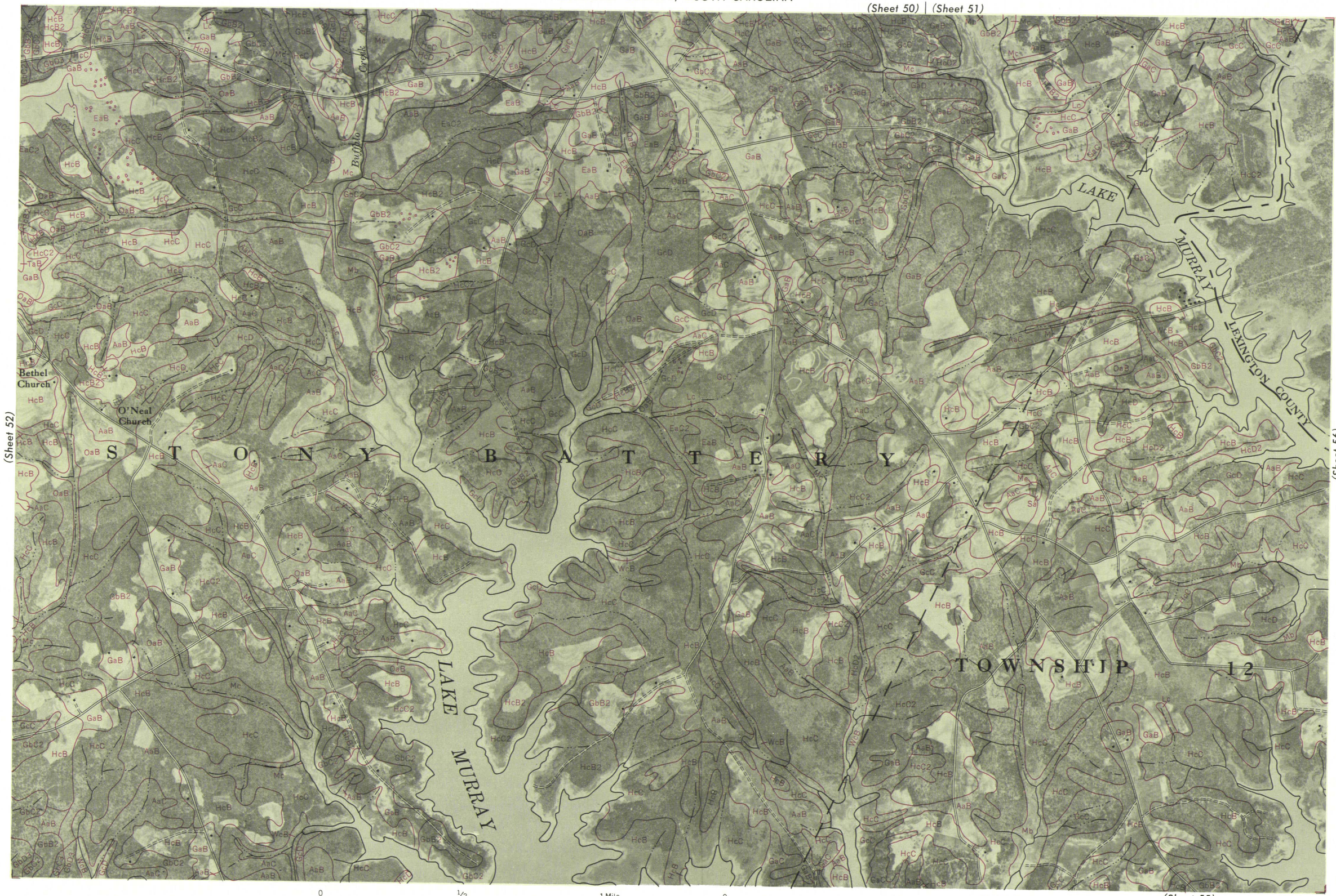
(Sheet 50) | (Sheet 51)

N



(Sheet 52)

(Sheet 56)

(Sheet 55)

0 ½ 1 Mile Scale 1:20000 0 5000 Feet

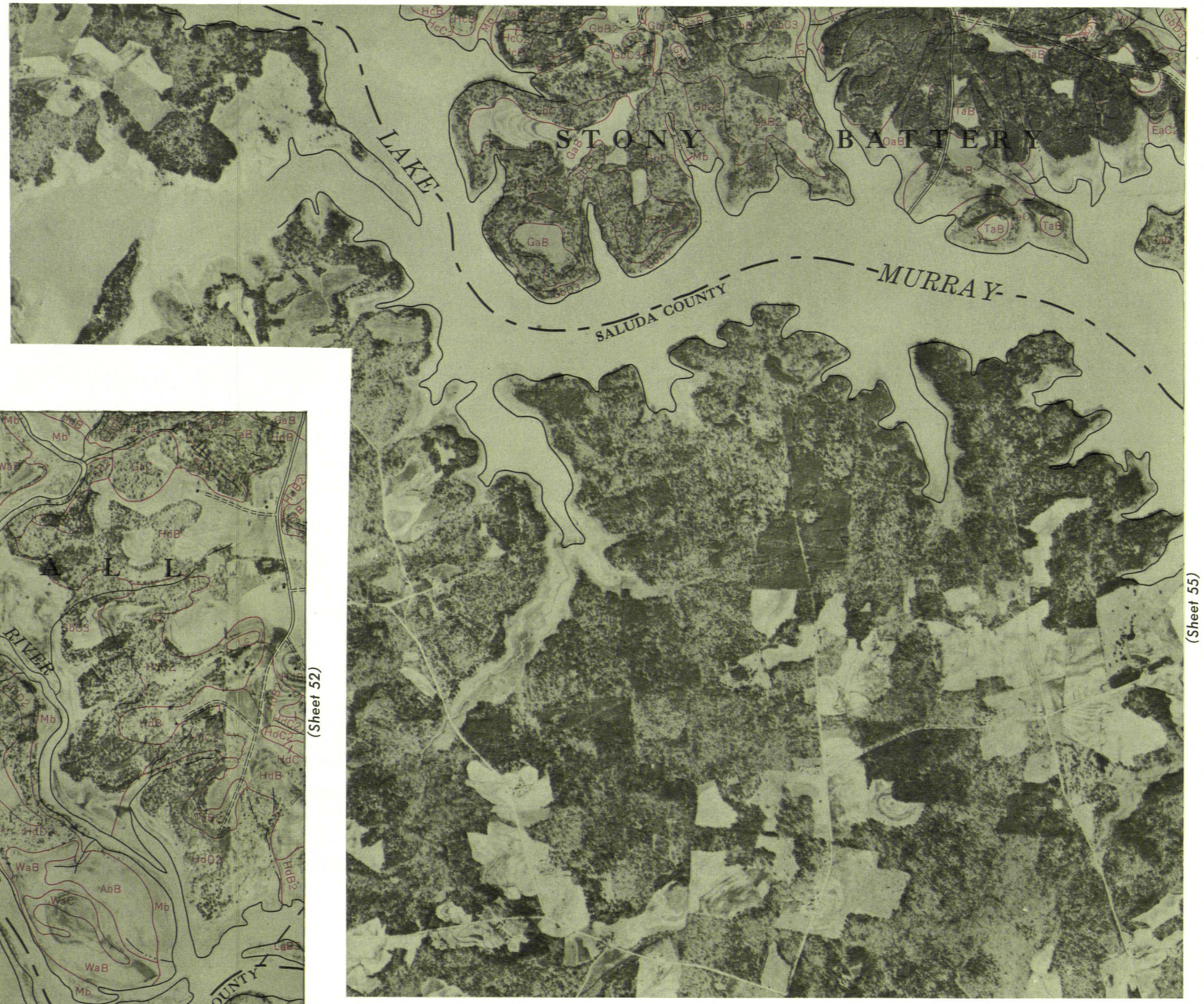
(Sheet 52)

NEWBERRY COUNTY, SOUTH CAROLINA

N

(Sheet 48) | (Sheet 49)

(Sheet 52)



(Sheet 55)

0 ½ 1 Mile

Scale 1:20 000

0 5000 Feet

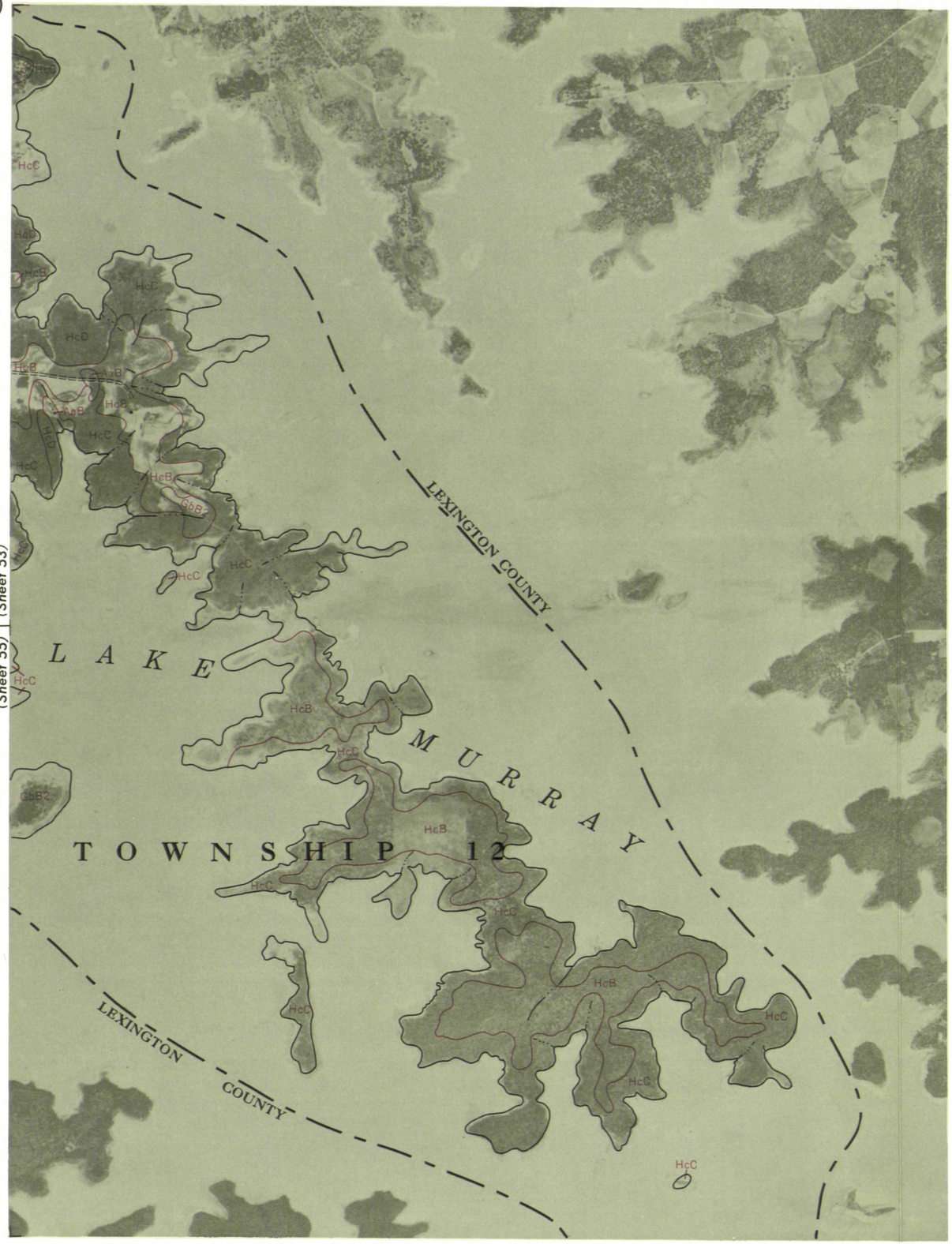
(Sheet 53)

(Sheet 54)

(Sheet 56)

0 ½ 1 Mile Scale 1:20 000 0 5 000 Feet

N



(Sheet 55) | (Sheet 53)

0 ½ 1 Mile

Scale 1:20 000

0 5000 Feet

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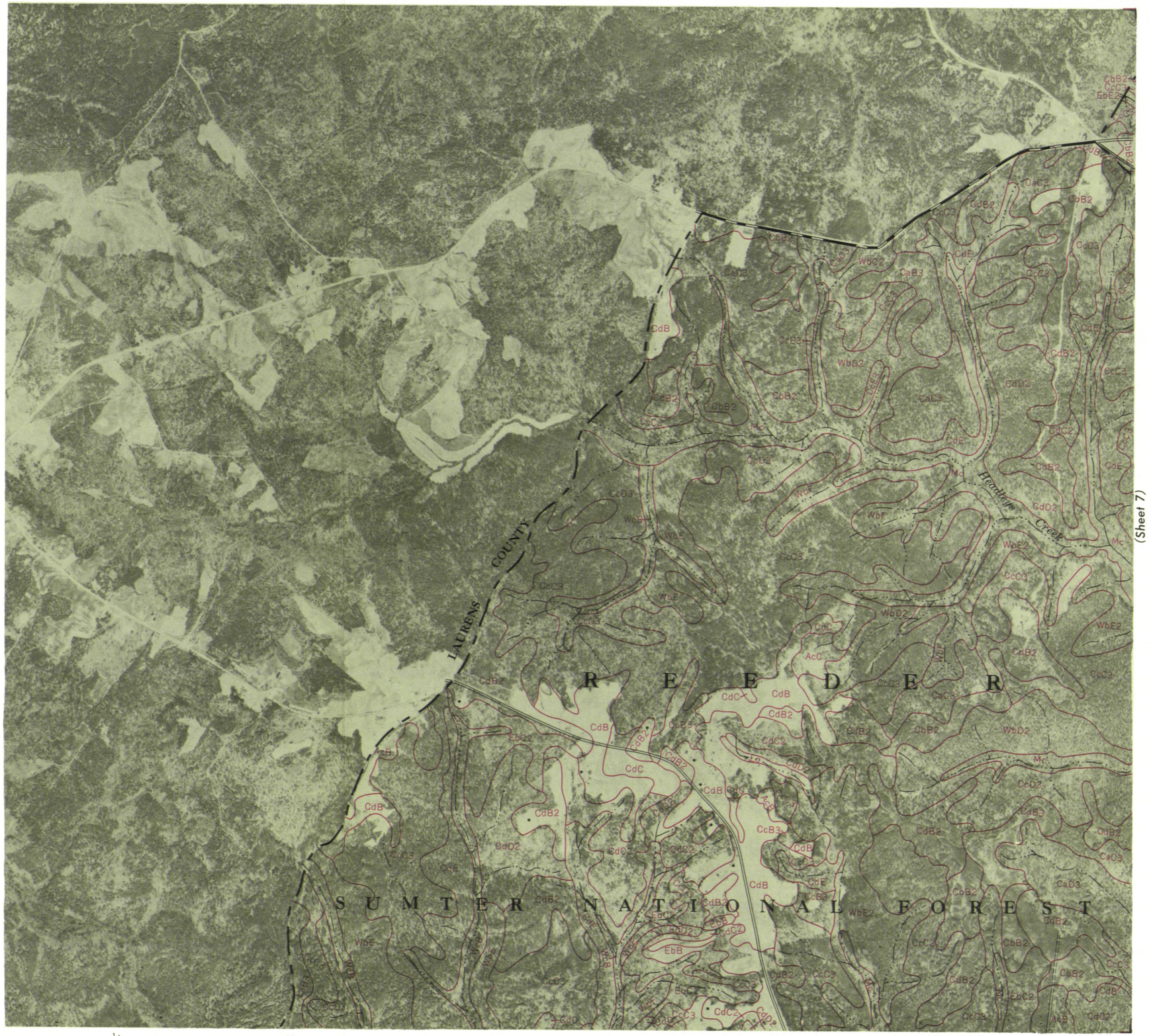
(6)

N



(Sheet 7)

(Sheet 11)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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NEWBERRY COUNTY, SOUTH CAROLINA

(Sheet 2)

7

N

(Sheet 6)

(Sheet 8)

C R O M E R

S U M T E R N A T I O N A L F O R E S T

R E E D E R

Cromer Crossroads

Patterson's Creek

Headleys Creek

Indian Creek

Beaverdam

(Sheet 12)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

This is one of a set of maps prepared by the Soil Conservation Service, U. S. Department of Agriculture, for a soil survey report of this area. For information regarding the complete soil survey report, write the Soil Conservation Service, U. S. Department of Agriculture, Washington 25, D. C. This map compiled from aerial photographs flown in 1954.

(8)

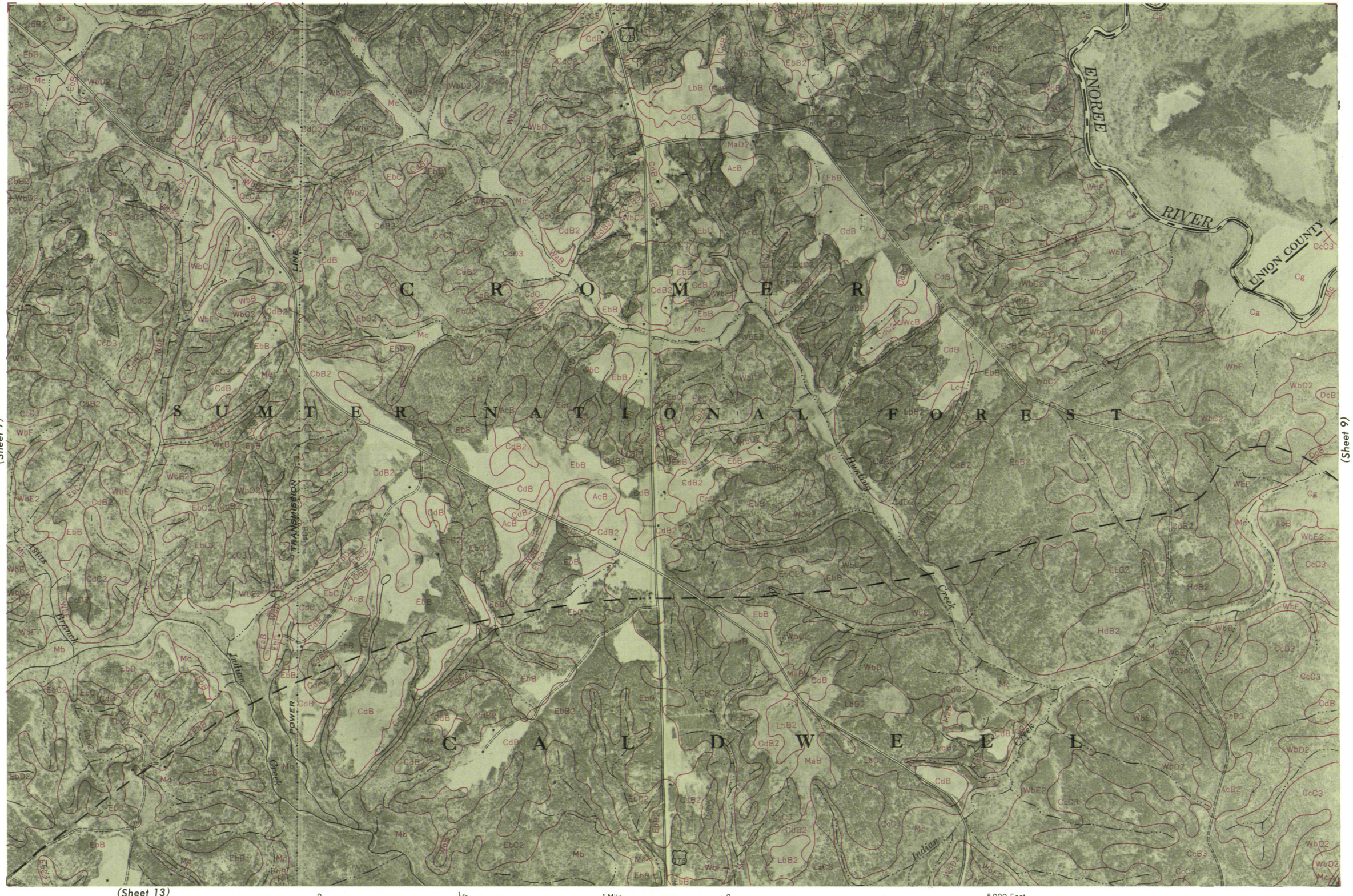
(Sheet 3)

N

(Sheet 7)

(Sheet 9)

(Sheet 13)



0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

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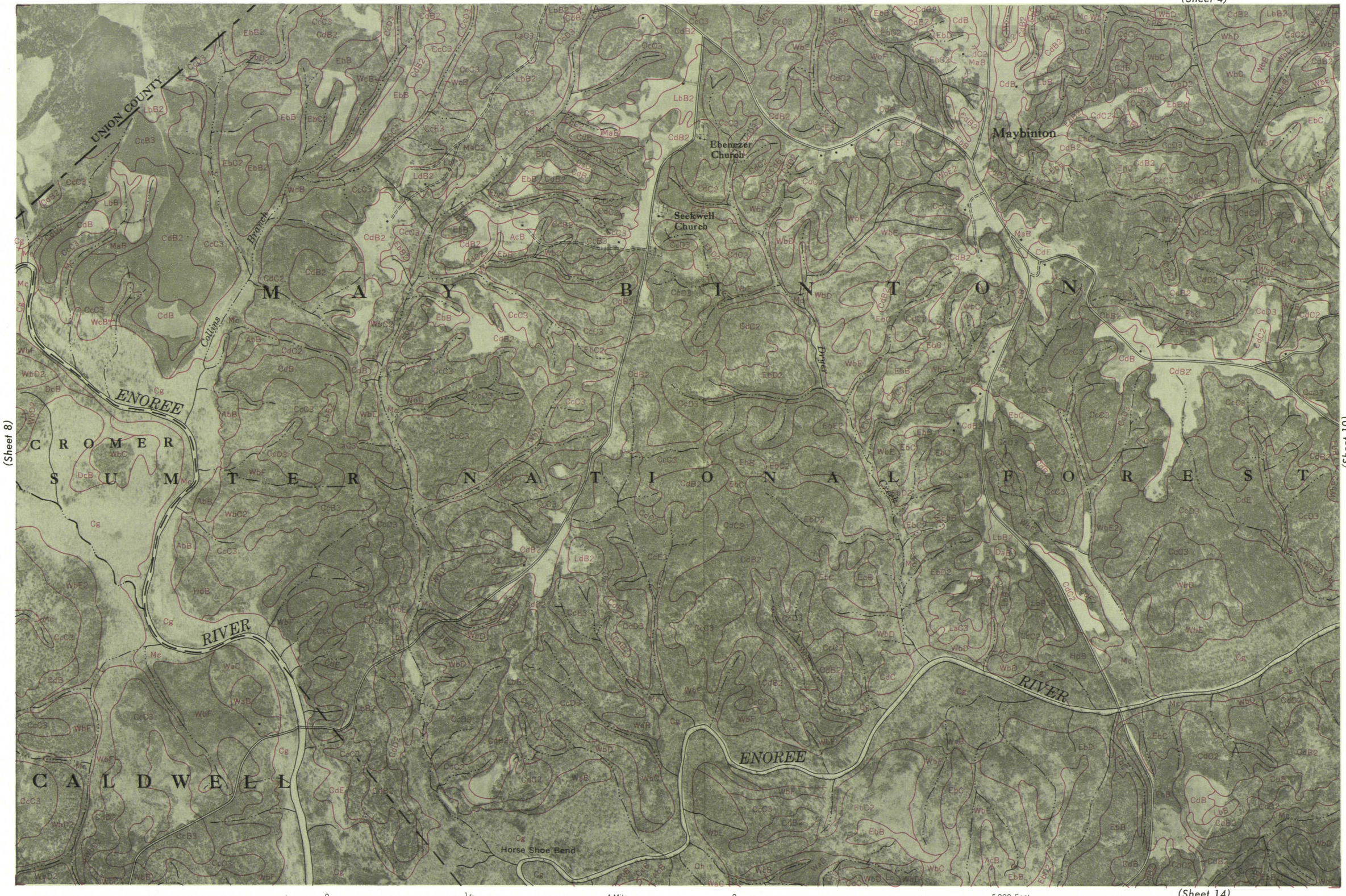
(Sheet 4)



0 ½ 1 Mile

Scale 1:20000

0 5000 Feet